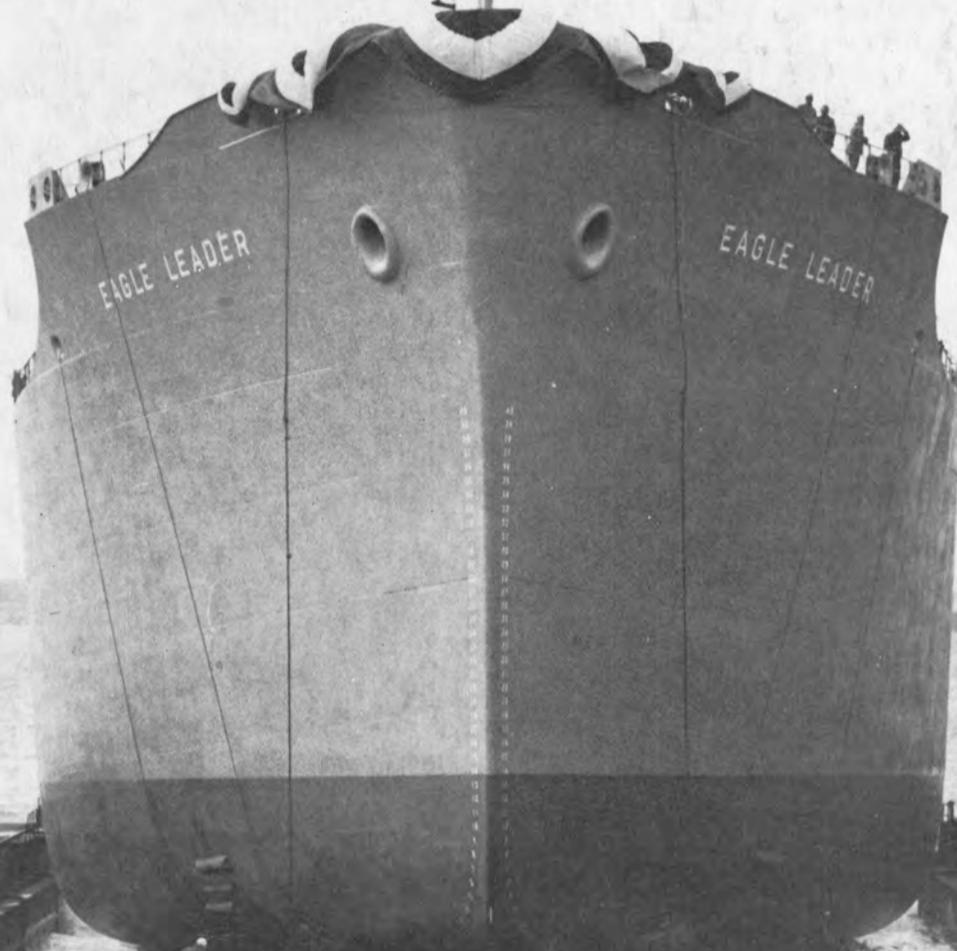


MARITIME REPORTER AND ENGINEERING NEWS



**Bethlehem Sparrows Point Yard Launches
First Of A New Class For United Tankers
To Transport Alaskan Oil To California**

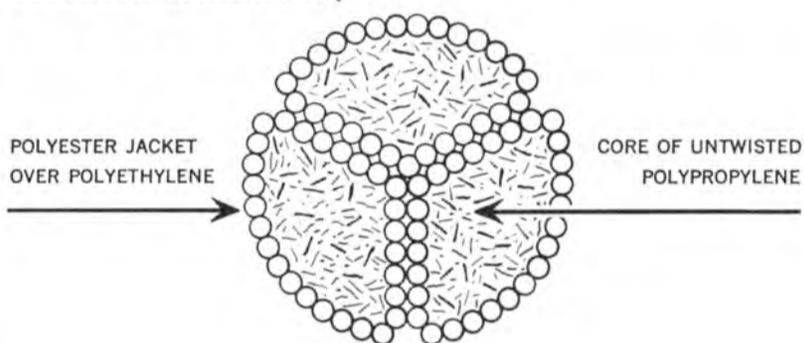
(SEE PAGE 7)

FEBRUARY 15, 1969

SSR

*... now available in exclusive,
patented **JETKORE** construction*

SSR Rope is an excellent blend of man-made fibers which combines the best features of polypropylene, polyester and polyethylene. Now, with JETKORE construction, it reaches a peak of performance that heretofore was unobtainable in marine ropes.



The explanation is simple. The SSR materials provide the highest resistance to abrasion and prevent fusing on bits. The JETKORE construction wherein each strand contains a core of untwisted polypropylene, which is compressed by a unique, patented process into a homogenous mass of strong fibers, imparts as much as 15% greater strength to the rope. All this at no additional weight and therefore no additional cost. JETKORE construction also provides greater resistance to distortion, kinking and hockling.

SSR is manufactured in two types . . . SSR-100 and SSR-200. Each strand of SSR-100 contains a single outer layer of yarns, each of which is composed of a polyester jacket over polyethylene. SSR-200 has two such layers of combination yarns.

JETKORE construction (Pat. No. 3,380,243) will now be furnished for all SSR, PNX, PNX-Type T and polypropylene ropes in the following sizes:

- 3 Strand — 6" circumference and larger
- 8 Strand Square Braided — 7" and larger

Remember, no one but AMERICAN can offer you the patented JETKORE construction.



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Cristoforo Colombo discovers the new McAllister.



Docking and undocking now faster, more efficient than ever.

The newest addition to the McAllister fleet, the 3160-hp Kort-nozzle tug "Jane McAllister," is shown here undocking the pride of the Italian Line, "Cristoforo Colombo." The "Jane's" flanking rudder system gives her a powerful edge in maneuverability that pays off in speed, economy and safe conduct of the ship.

The "Jane" is only one of four new powerful tugs that are swelling the McAllister fleet. Supertugs for superships. So, whatever your harbor movement needs, including tug and barge transportation, why not discover for yourself the new McAllister?

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STARPORTER Container Cranes are also built by the following:
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Lloyd's Reports Worldwide Ship Orders Show Good Increase

According to Lloyd's Register of Shipping, at the end of December there were under construction in the world 1,811 merchant ships of 15,669,023 gross tons. This is a little lower than at the end of the previous quarter. However, the tonnage of ships on order which have not been commenced rose by 4,457,955 tons to a record figure of 33,242,234 gross tons. Orders for tanker tonnage continue to provide the main basis of additions to the order book although the demand for bulk carriers has gathered momentum. The totals do not include ships building in Communist China or Russia.

As far as the total order book, which includes both ships being built and those on order, is concerned all of the leading countries showed healthy increases. Japan's order book stands at the mammoth figure of over 18-million gross tons of which 5,318,362 tons is under construction.

West Germany has 1,593,483 tons on the ways followed by Britain with 1,582,098 tons; Sweden with 957,327 tons and Italy with 930,138 tons. In sixth place is the United States with 710,719 gross tons under construction, an increase of 42,046 tons over the previous quarter. As far as the total order book is concerned, the United States is in tenth place with 1,602,239 tons, an increase of 216,953 gross tons since September.

Russia is having built in other countries 629,996 gross tons, one-half of this total is on order in Poland.

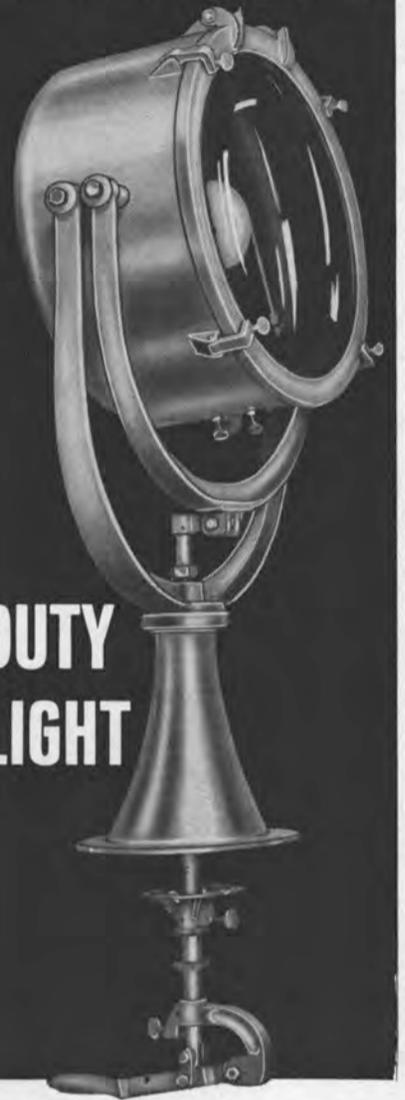
Oil tankers make up 8,024,208 gross tons, and bulk carriers 3,314,410 gross tons of the ships under construction throughout the world at the end of December.

Of the total tonnage on order, 5,607,961 gross tons are being built under the supervision of Lloyd's Register's surveyors.

McDermott Building Twin-Screw Tugboat

McDermott Shipyard of Morgan City, La., has received a contract from Foss Launch & Tug Co., Seattle, Wash., for the construction of a twin-screw tugboat. To be equipped with 2,500-total-bhp diesels, the vessel will have the following dimensions: 120 feet by 31 feet by 14 feet 11 inches.

RAY-LINE



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For Instant Illumination

A powerful Ray-Line incandescent searchlight gives you immediate identification of unexpected objects. No delay for arc warm-up. And best of all, it costs you 39¢ or less an hour to operate.

Ray-Line incandescent searchlights are designed to supplement your arc light, not replace it. And they are engineered to save you money when you don't need the power of a carbon arc light.

Ray-Line heavy-duty searchlights are housed in a new grade of lightweight formed aluminum for durability and salt water resistance. Available in lever or double-wheel control, 14" and 20" diameter, 500 to 1500 watts, 24 to 220 volts.

For complete specifications of No. 2033L searchlight (shown here) and full line of 6" to 20" searchlights, send for catalog CM66 MR

Manufactured by: **The Portable Light Co., Inc.** Established 1923
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MARITIME REPORTER AND ENGINEERING NEWS

No. 4

Volume 31

107 EAST 31st STREET
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Look inside the first EMD 645 in marine service. After 8,558 hours on Shell TornusTM Oil, the grooves in the piston rings are still visible.

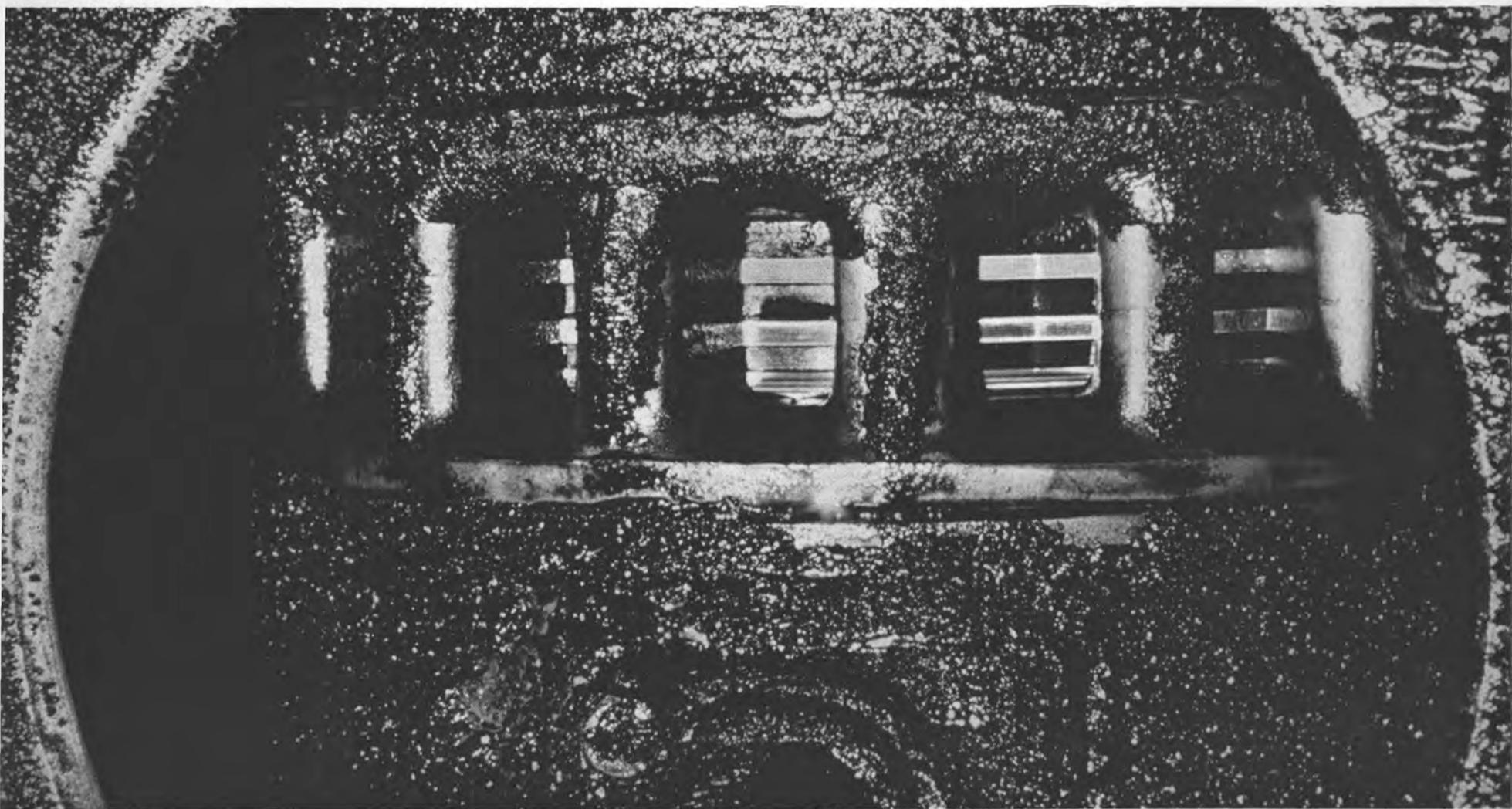


Photo above, a closeup view through the No. 2 cylinder air box inspection cover of a 20-cylinder turbocharged EMD 645.

This engine, and its starboard twin, power the *Lillian Clark*, one of Mississippi Valley Barge Line's newest boats for tow service on the lower and middle Mississippi.

Look *through* the ports—which is easy, because the ports are 100 percent open. Now look closely at the ring faces. The grooves in the chrome-faced rings are clearly visible. And if the piston weren't in the way, you'd see the cross-hatching on the cylinder liner.

All the signs of remarkable cleanliness. All

the signs of remarkably low wear. Even after pushing up to 30 loaded barges for 8,558 hours



Lillian Clark. Her twin new-series EMD diesels are each rated 3,225 continuous bhp at 800 rpm. Engines have been lubricated with Shell TORNUS Oil since launching.

at an average load factor of 70 to 75 percent.

Our photo reveals almost all you need to know about the crankcase lubricant: Shell's new super-stable, super-dispersant TORNUSTM Oil. It's listed by General Motors as a Widely Used Oil for both turbo and non-turbocharged engines. Its performance is verified.

But you don't need EMD 645's to take advantage of TORNUS Oil. Your Shell Marine Representative has the details. Or write Shell Oil Co., Dept. PB/3, P.O. Box 1890, Trenton, New Jersey 08607.



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Four high-strength steels from Armco save weight and improve stability in Delta Steamship Lines latest "all-hatch" cargoliners

Here are the names of these steels. Armco SSS® 100. Armco SSS 100A. Armco High-Strength B. Armco High-Strength A. Putting thinner sections of these steels to work topside reduced weight and improved stability while providing the strength necessary for heavy-lift cargo handling equipment and the "all-hatch" design.

Armco SSS 100 and SSS 100A are quenched and tempered alloy steels having 100,000 psi minimum yield strengths — three times that of conventional marine carbon steels. This strength puts muscle into heavy-lift posts, main deck plates, longitudinal bulkheads on the second deck, sheer and stringer strakes, and hatch coamings on the main, fo'c'sle, and upper decks. Rounded gunwale connections were formed by rolling an 8-inch radius in the outboard edge of the main deck stringer plate of SSS 100.

Armco High-Strength A and Armco High-Strength B, two steels with minimum tensile strengths of 70,000 psi, were also used in building parts of the cargo handling system. Armco High-Strength B over 3/4" thick was normalized to increase notch toughness.

For leadership in producing high-strength steels for shipbuilding, look to Armco. Write us, call us anytime. Armco Steel Corporation, Department W-918, P. O. Box 723, Houston, Texas 77001.

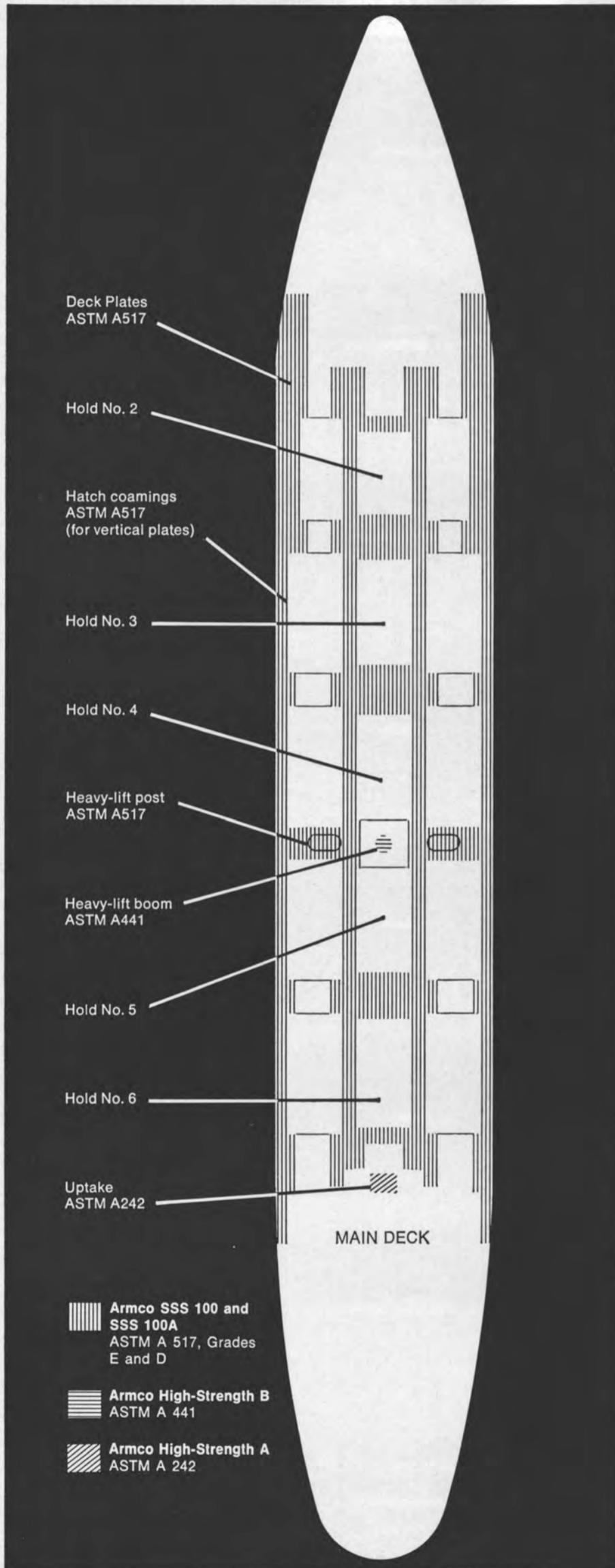


Photo by Litton/Ingalls

Delta Steamship Lines SS *Delta Brasil*. One of five new cargoliners that are the first large, modern, American-built vessels in the last twenty years to be 100% welded with no rivets whatsoever in the hull structure. Naval architect—Friede & Goldman, Inc., New Orleans. Built in Pascagoula, Mississippi, by the Ingalls Shipbuilding Division of Litton Industries.

ARMCO STEEL 

First Of A New Class For United Tankers Will Carry Alaskan Oil To California



Launching party for Eagle Leader at Bethlehem's Sparrows Point shipyard included, left to right: **Daniel M. Mack-Forlist**, general manager of the yard; **J. Carter Hammel**, chairman of the board of United Tankers; **Mrs. Milton Niergarth**, sponsor; Rep. **Edward A. Garmatz**, chairman of the Merchant Marine and Fisheries Committee, and **Daniel D. Strohmeier**, vice-president, shipbuilding, Bethlehem Steel Corporation.

The first of a new class of tankers for the United Tankers Group was launched recently at the Sparrows Point, Md. shipyard of Bethlehem Steel Corporation. **Mrs. Milton Niergarth**, daughter of United Tanker's chairman of the board, **J. Carter Hammel**, sponsored the vessel. Another ship of the same class is under construction at Sparrows Point.

When delivered this spring, the 37,250-dwt Eagle Leader will be assigned to take up a charter with Union Oil Company of California to carry oil from its recently discovered oil field in Alaska to the Long Beach, Calif. area.

The Eagle Leader's cargo tanks were coated with an epoxy system specifically designed for cold weather application. This was the first time that the system has been utilized in the Sparrows Point shipyard. These coatings will enable the ship to operate with a minimum of maintenance.

The Eagle Leader and her sistership will have an extended cruising range of about 12,000 miles. Storerooms, both dry and refrigerated, are large enough to hold a six-months supply of stores.

The vessel has a capacity of 333,000 barrels in its 15 tanks, and may be converted to the grain trade with a grain carrying capacity of approximately 1,500,000 bushels. Her cargo handling pumps will be capable of discharging a full liquid cargo in 14 hours.

The ship is equipped with Bethlehem centralized control which allows control of the engine from the bridge. The centralized control system is based upon the remote operation of the main propulsion plant for all ahead, astern, and maneuvering conditions, including standby. The propulsion plant is operated from the bridge control station while the engine room central

control station serves solely as a monitor of engine performance and bridge commands. The latter incorporates the engine controls and all other pertinent instrumentation and alarms to operate the vessel.

The ship is expected to operate at a normal sea speed of 16 knots. It has a 15,000-shp turbine driving a single screw. The design includes a curved rake stem, a cruiser stern and a spade rudder.

Length overall is 660 feet 2 inches, with length between perpendiculars of 630 feet. Its molded breadth is 90 feet and molded depth is 48 feet 9 inches. The draft will be about 36 feet 8 inches at 37,250 dwt. The vessel is built under the latest rules of the American Bureau of Shipping and will be inspected and classified by the Bureau.

A flume stabilization system, which involves the use of the cargo or ballast in three otherwise normal cargo tanks to reduce the roll of the vessel, is installed. This system is fitted in the No. 2 tanks, which differs from an installation in the No. 1 tanks made on an earlier vessel at Sparrows Point.

The house-aft vessel has been constructed to be as maintenance free as possible. The exterior hull from keel to rail and the weather deck are all protected by epoxy coatings. The crew will be quartered in single rooms of the most modern design, fully air conditioned and with permanent pre-finished plastic-coated bulkheads which will require a minimum of maintenance.

The latest in navigation and safety-at-sea equipment is provided, all of which are in accordance with the latest regulations of the U.S. Coast Guard.

The Eagle Leader is the seventh vessel of the 37,000-ton class to be launched at Sparrows Point. The yard now has under construction,

or under contract, 18 vessels: two Navy ammunition ships, two containerships, eight 37,000-ton tankers or chemical carriers, and six large tankers ranging up to nearly 70,000-dwt.

Following the launching, **Daniel M. Mack-Forlist**, general manager of the yard, was the host at a luncheon in honor of the sponsor.

United Tanker Group owns and/or operates 22 ships, most of them tankers. Included in the organization's operations is the South Atlantic and Caribbean Lines from Miami and Jacksonville, Fla., to Puerto Rico.

It was stated by **J. P. Coakley**, president of the United Tanker Group, that plans are being formulated for further construction in the near future.

Mitsubishi Delivers Oil-Drilling Platform To Southeastern

Mitsubishi Heavy Industries, Ltd., Japan, recently delivered at its Hiroshima Shipyard & Engine Works, the semi-submersible mobile offshore drilling platform Sedco 135G to Southeastern Drilling Inc., of the United States.

The platform is specially designed for stability under rough seas.

The platform which has a drilling capacity of 26,000 feet, a total weight during operation of 9,500 tons and a height of approximately 328 feet, is believed to be one of the largest drilling platforms in the world.

The platform is of the three-caisson type with a triangular main deck supported by three cylindrical caissons, each having a diameter of 36 feet and a height of 131 feet, with a footing at the bottom of each caisson.

Maritime Administration Tentatively Approves Liberty-Ship Conversion To Oceangoing Barge

Acting Maritime Administrator **James W. Gulick** has approved in principle the trade-out under the Ship Exchange Act of a Liberty ship from the reserve fleet to Yacht Transfer, Inc., for conversion to an oceangoing barge for the transportation of pleasure craft and other items.

The trade-out of the Liberty ship is subject to Yacht Transfer, Inc., meeting financial, citizenship and other requirements of the ship-exchange program as set forth in Public Law 86-575 and Public Law 89-254.

An announcement by the Maritime Administration said that Yacht Transfer, Inc., is to be organized for the specific purpose of transporting pleasure craft for individual owners and manufacturers by a large-capacity oceangoing barge.

Details of plans for the conversion, as explained by the Maritime Administration, are as follows:

"The Liberty ship would be converted into a semi-submersible, oceangoing barge by the removal of the ship's interior, cutting off the

GE Appoints Tanner Navy & Marine Sales Subsection Manager



Richard W. Tanner

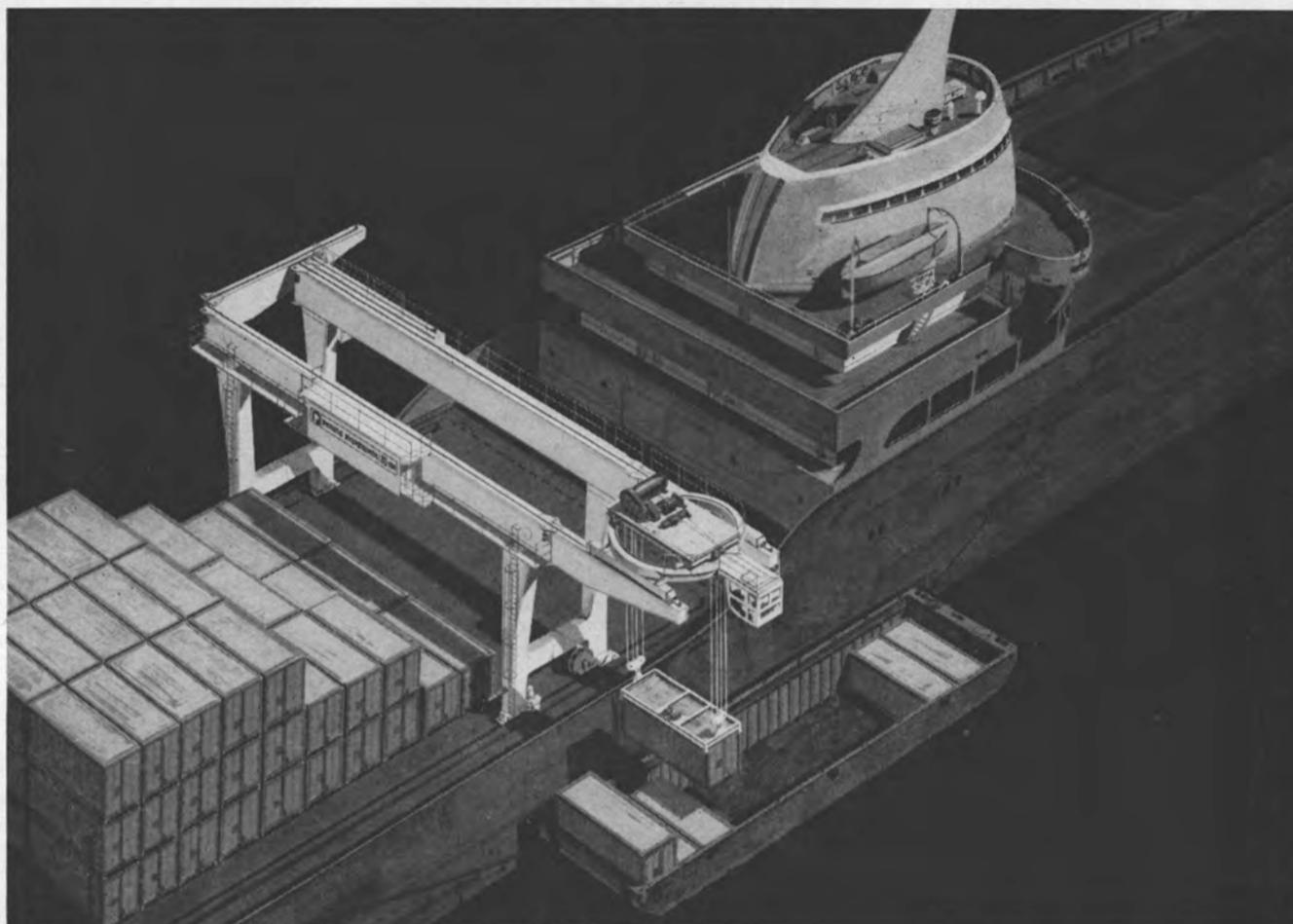
Richard W. Tanner has been appointed manager of the new Navy and Marine Sales Subsection of the General Electric Company Industry Control Department, Salem, Va.

He will be responsible for worldwide sales of central operations systems and Navy and marine starters, accessories, and related equipment.

Mr. Tanner joined General Electric in 1952 on the engineering test program. Since, he has had positions as a proposition and sales engineer with the Industry Control Department. In 1956, he moved to the Navy and marine sales unit and has been a sales engineer, a sales specialist and was sales manager until his recent appointment.

Mr. Tanner received his bachelor of science degree in electrical engineering from Clarkson College of Technology in 1952. He served with the U.S. Navy. Mr. Tanner is a member of The Society of Naval Architects and Marine Engineers and the Institute of Electrical and Electronic Engineers, Inc.

stern and installing a door. The proposed barge would be able to load craft weighing up to 60 tons by use of mobile cranes after the craft have been floated to the door at the stern. Heavier craft could be floated into the barge by submerging the barge. When used as a modified drydock, the barge has a reported lifting capacity of 5,000 tons. The barge would also have four booms forward with a maximum lifting capacity of 30 tons, and the main cargo well deck would be 250 feet by 40 feet by 32 feet high. The No. 1 cargo hold would be retained and used for cargo which should not be exposed to the elements. The company's transporting service would be primarily along the East Coast and in the Caribbean Islands. Other proposed uses of the barge by the company—transport new boats from manufacturers, transport houseboats, transport shrimp boats from Texas to the shrimp fields in Western Caribbean, and transport heavy construction machinery, smaller barges and floating dredges."



Artist's conception of the PACECO Shipstainer designed for the LASH program.

PACECO SHIPSTAINERSTM Bring Experience Record to LASH Program

When the revolutionary LASH fleet puts out to sea, the system's first eleven vessels will be equipped with eleven cranes by the world's most experienced container handling crane manufacturer—PACECO.

These specially designed and built 30-ton Shipstainers will permit LASH vessels to load and unload containers at pierside as well as from barges in the roadstead. Unique engineering features include: a rotating trolley for stowing containers in both fore-and-aft and athwartships positions; quick-change lifting spreaders for handling both 20' and 40' containers; folding jib girders for clean, com-

pact stowage; and an operating capacity at a maximum list of 5° and a maximum trim angle of 3°. Utilizing ship's power, the PACECO Shipstainer operates on DC variable voltage for smooth, positive container spotting.

PACECO brings to the LASH program a performance record based on a decade of engineering know-how in the design and manufacture of container handling cranes. We can provide the same versatile and economical type of operation for *your* ships. A team of PACECO engineers is available for consultation. Write for our Advanced Systems Brochure.



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Portainers



Rail-mounted and Rubber-tired Transtainers



Shipstainers

N.Y. Port Engineers Elect Fox President— Hear Paper On Operation Of Gas Turbines



Attending the New York Port Engineers Society meeting were, left to right: **William F. Muir**, assistant manager for maintenance and repair, Marine Department, Gulf Oil Corporation; **Joseph Thelgie**, port engineer, Marine Transport Lines; Mr. **Hoch**; **H. T. Haller**, vice-president, Seatrain Lines; **John C. Fox Jr.**, manager, Ship Group, Tanker Department, Esso International Inc., and **Paul Farr**, Farr Marine Industrial Sales.

At its January meeting The Society of Marine Port Engineers New York, N.Y., Inc. elected **John C. Fox Jr.** to serve as president for the ensuing year. Mr. **Fox** succeeds **H. T. Haller** who served as president during the past year.

Other officers elected were: first vice-president—**Philip A. Donahue**, Maritime Overseas Corporation, and second vice-president—**George J. Mortensen**, American Export Isbrandtsen Lines. Elected to the board of directors to represent members were: **L. Paul Ackermann**, Alcoa Steamship Company; **Charles Anderson**, T. J. Stevenson Com-

pany; **Matthew Carroll**, Port of New York Authority, and **Harry H. Hunt**, American Bureau of Shipping. Chosen to serve on the board of directors to represent associate members were: **Leslie E. Fayle Jr.**, Bull & Roberts Inc., and **Eric H. Johanson**, International Cargo Gear Bureau.

Considerable interest was shown in the paper presented during the meeting by **Charles E. Hoch**, superintending engineer, Military Sea Transportation System, entitled "Operating Experience with Gas Turbine on the SS Admiral William A. Callaghan."

Oceanographic Ship Maneuvering Systems Discussed At Pacific Northwest Meeting



Taking part in Pacific Northwest Section's December meeting were, left to right: **A. Tomlinson**, General Electric Company, discussor; **Frank Gram**, W. C. Nickum & Sons, discussor; **W. C. Biles**, author; **R. Griffith**, Sperry Marine Systems, discussor; **A. A. Hyde**, author; **Michael Markey**, Section chairman, Markey Machinery Company, and **Edward C. Lind**, meeting chairman, Columbia River Area, Hudson & Lind Inc.

The regular December meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers was held in the Quay Restaurant in Vancouver, Wash., which is on the opposite side of the Columbia River from Portland, Ore. The Columbia River Area served as host for the meeting.

There was a very good turnout of members, guests and students to hear a technical paper describing the steering system and bow thrusters installed on the AGOR-12. This oceanographic research

vessel is nearing completion at the Northwest Marine Iron Works in Portland.

Arthur A. Hyde, sales engineer, Sperry Gyroscope Company, described the steering system. **Walter C. Biles**, electrical superintendent, Northwest Marine Iron Works, presented a paper describing the bow thruster and propulsive rudder installations on the vessel. Representatives of General Electric Company and Sperry Rand Service Department answered questions and participated in the discussion

Bids Being Solicited By Coast Engineering For Excursion Boat

Interested shipyards have been invited to bid on one 80-foot, 300-passenger excursion boat by Coast Engineering Company. The prospective owner of the vessel is **Robert Federico** of West Islip, Long Island, N.Y.

The vessel will be of steel con-

struction and have two decks and twin-screw propulsion. It will include all features common to a boat of this class.

Bidding documents, plans and specifications may be obtained from Coast Engineering Company, P.O. Box 566, Norfolk, Va. 23501. The invitation to bid is identified by the number CE-1937.

It is expected that bids will be opened on or about February 25.



B
Total capabilities
in power transmission
systems design
and manufacturing

*from flying above
to submerging below...*



The unusual Dolphin hydrofoil cruises six feet above the surface of the ocean propelled by a Buehler power transmission system, while far beneath the surface submarines of the U. S. nuclear fleet rely upon precision reactor rod motors produced by The Buehler Corporation.

Buehler's 35 years of experience include the pioneering and improving of the Turbopower marine jet propulsion system. Buehler jets are currently used for auxiliary propulsion on hydrofoils such as the Dolphin and prime movers for work boats as well as pleasure craft. And, the low maintenance, efficient Turbopower jets are ideally suited for many undersea applications.

This wide range of marine experience makes The Buehler Corporation particularly qualified for new undersea projects and a preferred source for many leading names in aerospace, nuclear, marine and commercial products industries.

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9000 PRECISION DRIVE, INDIANAPOLIS, INDIANA 46236



Mortgage Insurance For LASH Lighters Approved by MarAd

The Maritime Administration has approved mortgage insurance on 360 lighters to be built as part of Prudential Lines five new lighter carrying (LASH) ships.

The approximately \$12.8-million worth of lighters will actually be purchased by several financial institutions pooling their resources

and leasing the 61-foot-long and 31-foot-wide, 375-dwt lighters to the subsidized carrier.

Owning Trust, Bank of America National Trust and Savings Association, and the Bank of New York, will arrange the financing and the construction of the lighters by Avondale Shipyards, New Orleans.

Owning Trust will handle the actual leasing of the lighters to Prudential. The Bank of America

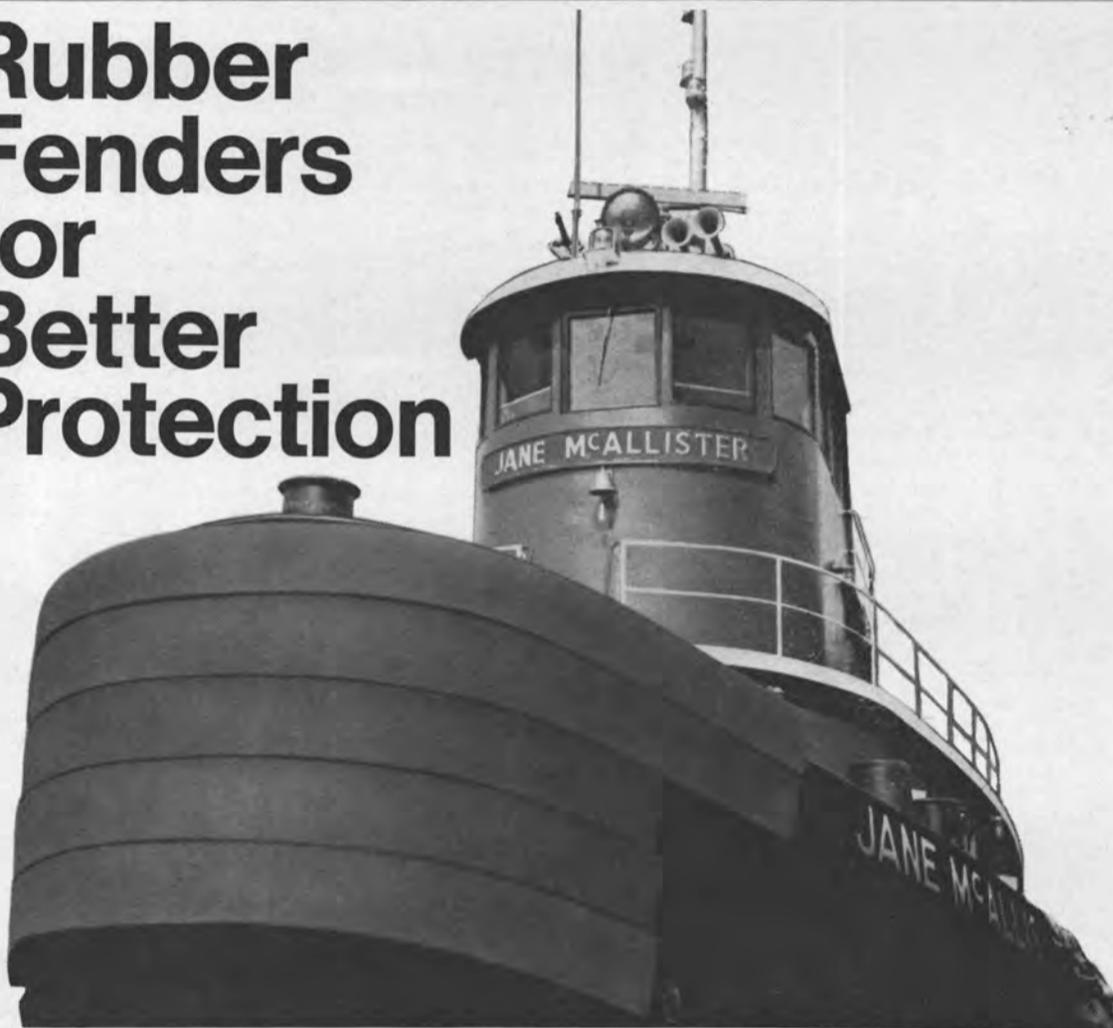
National Trust will act in the transaction as a trustee for the Marine Midland Grace Trust Co., of New York, MarAd explained, which institution together with the Bank of New York will put up about 25 percent of the total cost. The remainder of the funds will come from the General Electric pension fund through purchase of bond to be issued by Owning Trust.

The order for the 360 lighters carries an option for 65 more which

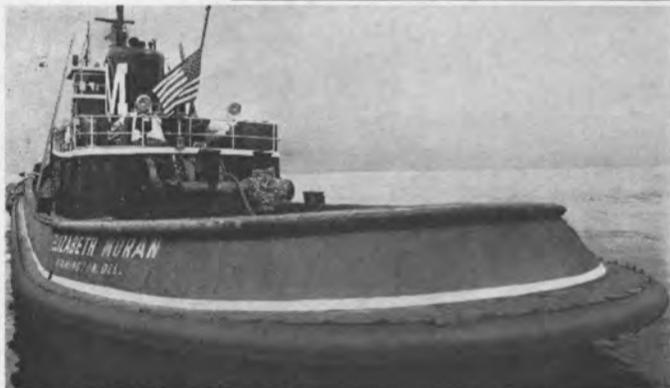
must be exercised by July 1, 1969. Deliveries are to be in five equal groups, to coincide with the deliveries of the new ships, beginning about February 1970 and ending in late November 1971.

The lighters, construction contracts which have been signed, were designed to haul containers, break-bulk freight, and dry bulk cargo and will be used in Prudential's U.S. North Atlantic-Mediterranean trade.

Rubber Fenders for Better Protection



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Uniroyal Fendering Systems, designed by HUGHES, provide the ideal way to protect tugs, barges, vessels and piers. Made for heavy duty, they meet the most exacting demands of rugged towing, barge, railroad and transport work as well as delicate handling of nuclear submarines. Because they are several times more durable than rope and most other types of fenders, are resistant to high friction and water absorption and provide the highest degree of shock absorption, Uniroyal Fendering Systems are by far your best buy.



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CLEARING HOUSE FOR MARINE DIFFICULTIES SINCE 1894

Hydronautics Opens Houston Office For Ocean Engineering



Kenneth G. Arkwright

Hydronautics, Incorporated, one of the nation's foremost engineering and development firms specializing in hydrodynamics and related technology, has announced the opening of its new 'Ocean Engineering-Houston' office. Announcement was made by Phillip Eisenberg, president of the Laurel, Maryland-based company.

Kenneth G. Arkwright, has been named to head the new office, which is located at 3263 Branard, Houston, Texas. Mr. Arkwright will provide liaison to Hydronautics engineers and scientists for services to the petroleum and marine industries.

Hydronautics, by virtue of its extensive history of achievement and competence, is internationally recognized for its contributions in the fields of hydrodynamics and related technologies. In this broad area, the company provides engineering, design and prototype development services for a wide range of marine vehicles and configurations, while operating the largest privately-owned hydrodynamics research facility in the United States.

IHI Wins Orders Totaling \$32-Million

Japan's Ishikawajima - Harima Heavy Industries, Ltd., recently reported that it had won shipbuilding orders from foreign owners worth \$32.3-million.

Included are a 212,600-ton tanker for the Liberian Expedience Transports Inc.; a 23,800-ton petroleum products carrier for the Fortuna Oceanic Navigation S.A. of Panama; a 53,700-ton bulk carrier for Wahking and Co., Ltd., of Hong Kong and a 37,900-ton bulk carrier for the Compania Naviera Termar S.A. of Liberia.

These ships will be delivered from August 1970 to December 1971, the Japanese company said.

A BLUE DIAMOND PORT

HAMPTON ROADS
 More people rely on Curtis Bay's "Blue Diamond Fleet" in this area because we offer round-the-clock service... more tugs... more powerful tugs... experienced seamen.

CURTIS BAY TOWING COMPANY, HAMPTON ROADS • BALTIMORE • PHILADELPHIA

Non-Metallic Pellets For Blast Cleaning Offered By New Firm

A non-metallic pellet for uniform high-speed blast cleaning and finishing is the product of a new corporation formed in Trenton, N.J., Pelletronics, Inc. Located at 210 East Hanover Street, the new company will handle manufacturing and distribution of the pellets on a national scale.

Incorporated in Delaware, the firm is headed by three officers with vast experience in the blast-cleaning industry. Two of them spent a combined 52 years with Baldwin-Ehret-Hill. They are **Edward R. Stevens**, chairman of the board and treasurer, who served as BEH president from 1960 until this past October, and **Robert F. Hastings**, president, former director of manufacturing at BEH.

The other officer is **George R.**

Tollefsen, executive vice-president, who is also president of Tollefsen Bros., a Brooklyn firm engaged in blast cleaning and painting of large ocean vessels, as well as large tanks and industrial equipment.

Pelletronics offers a variety of blasting materials, depending on the job. Pellet size ranges from 1/8 inch to invisible particles for finer work.

The high-speed peening of the pellets leaves a smooth surface,

free of scratch marks so often caused by angular abrasives on metal which can easily lead to quick corrosion.



Edward R. Stevens

Chemically inert and non-magnetic, the pellets meet both federal and military specifications for glass beads in blast cleaning. Their silica content is lower than any other non-metallic spherical material currently on the market.

Clogging and corrosion of blasting equipment is reduced because the pellets do not absorb moisture. Since they are strong and dense, they can be recycled numerous times with very little wear on the equipment.

Another plus feature of the new blasting materials is that they are dustless. It is estimated that a painter could follow within 50 feet of the blasting and recoat the metal surface immediately before oxidation sets in.

For more information, write: Pelletronics, Inc., 210 East Hanover Street, Trenton, N.J. 08607.

Richard P. Conerly Named President Of Pott Industries

H. T. Pott, chairman of the board and president of Pott Industries Inc., has announced that **Richard P. Conerly** will succeed him as president and chief executive officer of the company. Mr. Conerly, prior to this appointment, was executive vice-president of Peabody Coal Co.

Mr. Conerly was graduated from the University of Missouri in 1948 and Harvard Law School in 1952, and was a partner in Thompson Mitchell Douglas Neill & Guerri prior to joining Peabody in 1965.

Delmore Corp. Of U.S. Awards Contract To IHI For Bulk Carrier

A 37,900-dwt bulk carrier will be built at the Aioi Shipyard of IHI (Ishikawajima-Harima Heavy Industries Co., Ltd) of Japan for the Delmore Corporation of the United States. The contract was recently signed in New York.

The ship will be 600 feet long 92 feet 6 inches in breadth, 53 feet in depth and 36 feet 9 inches in draft. Delivery is scheduled for July 1970.

An IHI-Sulzer 7RND-76 14,000-bhp diesel engine will be installed as the main propulsion machinery, providing the ship with a trial speed of 17.0 knots.

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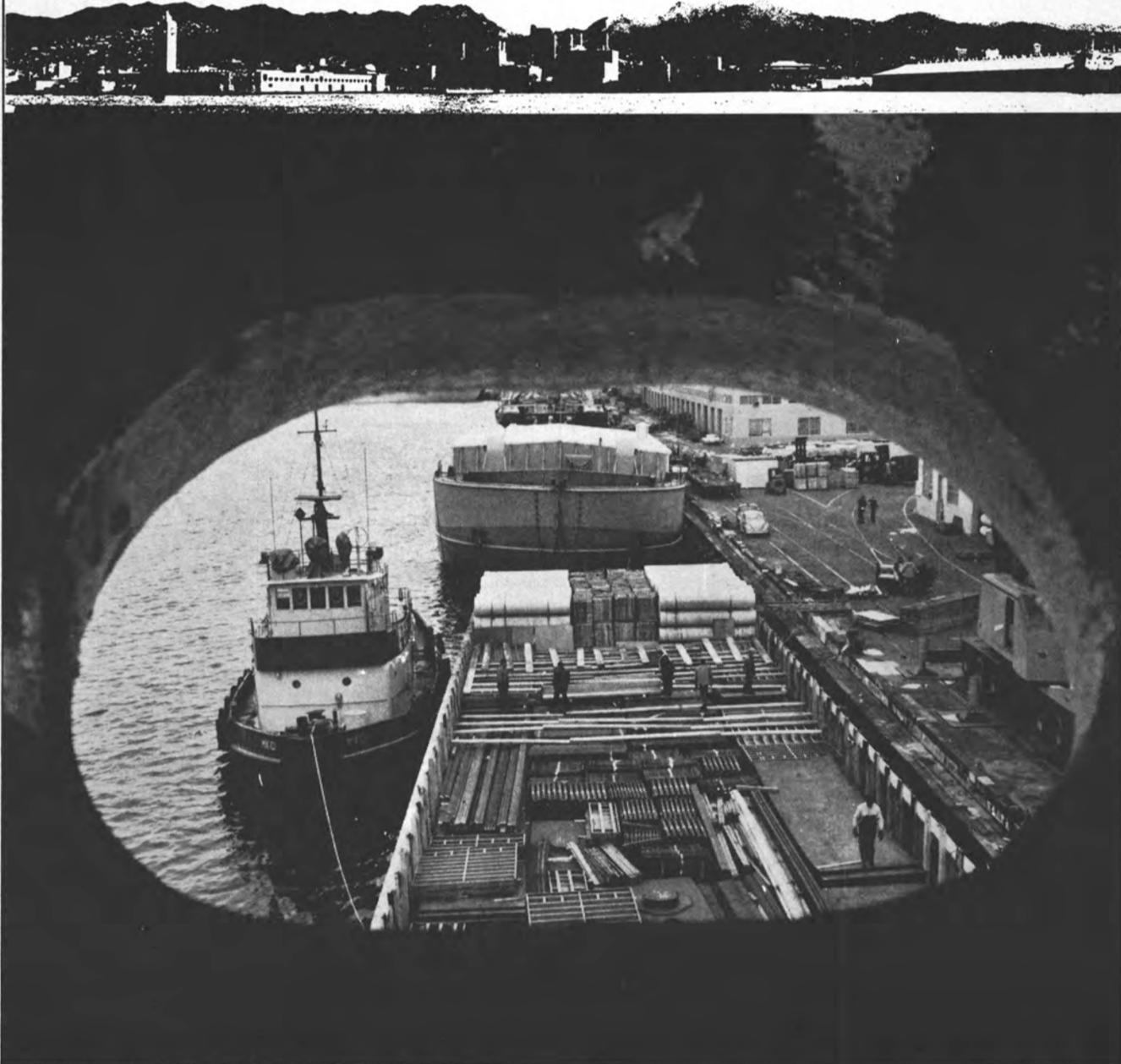
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The Design And Economics

G. F. Schumacher*

The Cost Of Fuel And Lubricating Oils And The Maintenance Of Propulsion Plants Are Major Considerations. The Author Calculates Them For A 15,000-Bhp Plant.

There have been many European technical papers presented regarding the economics of slow-speed and medium-speed diesel engines. The purpose of this paper is to present an American designed and manufactured diesel engine, suitable for marine propulsion in the same manner. The engine described is the Model 38A20 opposed-piston engine, as produced by Fairbanks Morse Power Systems Division of Colt Industries.

The 38A20 diesel engine is a two-cycle, uniflow scavenged, opposed-piston engine with cylinders in line or a 45-deg. 'V.' It has been designed with six and nine cylinders in line or 12 and 18 cylinders in 'V,' all rated at 1,250-hp per cylinder. For marine propulsion, the engine may be direct reversing.

The cylinder block and lower base are mild-steel weldments with low stress levels. A series of transverse bulkheads carry the stress between the upper and lower portions of the cylinder block.

Power is transmitted to the shaft through a cast-iron cocktail shaker, oil-cooled piston, and a nodular-iron connecting rod. The large lower piston controls the air inlet parts while the small upper piston controls the exhaust parts.

Since the valving action of the upper piston develops 15 percent of the rated power, it is connected to the engine output by a rocker arm, rods, upper crankshaft, and vertical gear train.

The crankshafts are high-strength, nodular-iron castings with large corings in the mains and pins to reduce weight.

Clutch And Couplings

In order to give a vessel an optimum operating condition when using twin-pin units (two medium-speed engines geared to a single shaft), disconnect clutches must be provided. The airflex-type clutch furnishes the less expensive means of providing this choice of operation.

Torsional flexibility also must be

considered. Fairbanks Morse prefers to use torque shafts as a simple solution to most propulsion problems. Each propulsion system must stand on its particular merits. When the exact position of machinery has been placed for the vessel and the propeller and shafting have developed their final configuration, Fairbanks Morse then calculates the torsional problems for the system and recommends additional torsional couplings if they are required.

Fuels

Successful operations on heavy-oil fuel have been achieved on cast-iron liners with an untimed cylinder lubricating-oil system. The success is attributed largely to the low metal temperatures in the engine.

As marine diesel engines must operate on the fuels available in the area in which the vessel is scheduled, the 38A20 engine has been operating on a heavy fuel which has a wide range of chemical and physical characteristics.

For the purpose of this study, 3,500 sec. Redwood I at 100°F. has been used. Maintenance schedules for the engine were laid out on this premise.

Lubricating Oil

The successful operation of a medium-speed, trunk-piston engine burning heavy fuels depends on the correct selection of lubricating oils. On the 38A20 test engine, a medium detergent-dispersant oil was used to determine a base operating condition for the engine. The lubricators were filled directly from the crankcase.

The lube-oil consumption on the Model 38A20 has been between 5,000 to 6,000 bhp-hours per gallon. To date, the pistons and rings have been clean on inspection. The exhaust ports have shown no signs of plugging with carbon.

The yearly fuel and lubricating oil costs calculated by the author for two six-cylinder 38A20 engines (7,500 hp at 450 rpm, each) developing a total of 15,000 bhp and operating 7,200 hours per year are: fuel oil—4,925,880 gallons or \$227,529; lube oil—18,000 gallons or \$25,200.

Maintenance

The Model 38A20 engine has just started its service life. There will be approximately 150,000 hp de-

livered for base-load plants by January 1969. The six-cylinder test engine has 7,000 hours of operation with over 1,500 hours of operation on heavy fuel.

The maintenance figures (developed in the appendix to this paper) for the Model 38A20 have been developed on progressive maintenance which is considered ship-force work and can be accomplished by either day workers or watch standers.

Manhours required for maintenance on a ship for a 25-year period of 180,000 hours of operation (300 days per year) are 25,404 hours for two six-cylinder 38A20 engines and gear and approximately the same hours for a 12-cylinder engine. This manhour figure breaks down into 15,980 hours for preventive maintenance and 9,424 hours for repair and replacement (actual estimate for the latter operations was 4,712, but the author doubled it to be conservative). The material costs are given as \$207,065 for preventive maintenance and \$402,700 for repair and replacement. This then gives an average material cost of \$1.63 per bhp per year for 15,000-bhp twin 38A20 diesel engines operating 7,200 hours per year over a 25-year period. For less operating hours, the cost is naturally less but not in direct proportion to the operating hours.

Conclusions

With proper design considera-

tions, a 400- to 450-rpm trunk-type, two-cycle engine without valves can operate on residual fuels successfully. As in other engines, the piston ring and ring groove wear will be slightly more rapid than on light oil. Increased maintenance on the fuel injectors may be required, depending on the fuel filtering and treatment system employed. Maneuverability on heavy fuel is not a problem if adequate heating of the fuel system is provided.

As direct-drive engine users have experienced, the ability to burn heavy fuel provides a significant economic advantage in long-term savings. Prime movers for ship propulsion can, therefore, be evaluated largely on the basis of specific fuel consumption when an operating profile is established.

Lubricating-oil consumption in a medium-speed engine need not be higher than other heavy-fuel engines with the application of a good lubricating system and the selection of modern compatible lube oils. The cost of lube oil consumed for heavy-fuel engines is higher since the most successful cylinder lubricants are more expensive. This expense can be reduced by using less expensive lubricating oils during operation on higher-grade residuals.

Figure 1 shows a proposed layout for twin-pin, 18-cylinder 38A20 engines used to develop 45,000 bhp in a twin-screw ship.

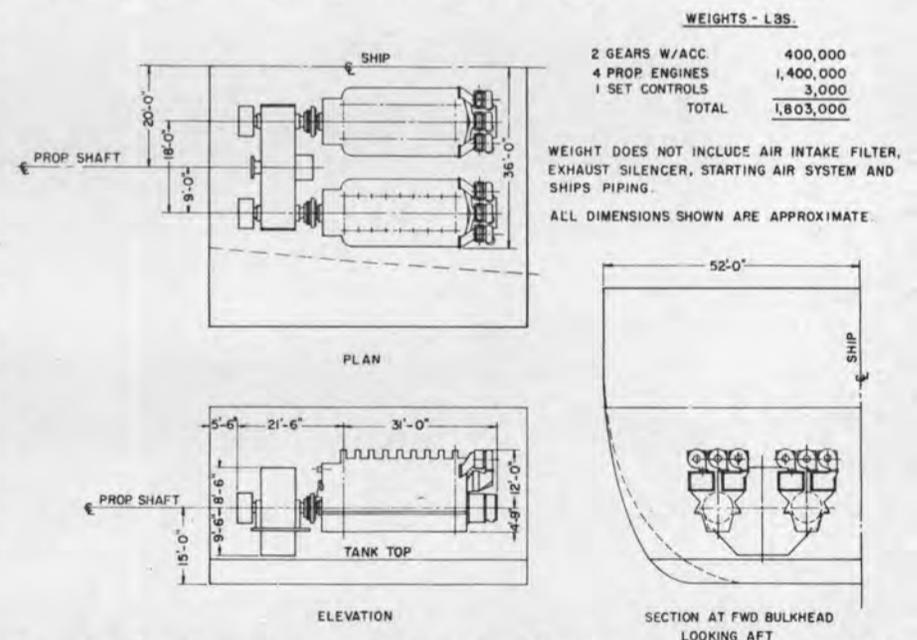


Figure 1—Overall arrangement of twin-pin, 18-cylinder Fairbanks Morse, Model 38A20 diesel engines used for twin-screw propulsion, developing a total of 45,000 bhp.

*Mr. Schumacher, manager, marine sales, Fairbanks Morse Power Systems Division, and a retired U.S. Coast Guard captain, presented a paper before a recent Great Lakes and Great Rivers Section of The Society of Naval Architects and Marine Engineers on diesel powerplants. Condensed here is one section of that paper.



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Newport News Ship Advances F.C. Davis And R.S. Plummer



Fred C. Davis



R. S. Plummer

Newport News Shipbuilding and Dry Dock Company, Newport News, Va., has announced the election of **Fred C. Davis** to the post of vice-president operations. Mr. Davis was formerly vice-president and general manager.

R. S. Plummer has been appointed general manager of the shipyard, a subsidiary of Tenneco Inc. He served previously as assistant general manager.

Mr. Davis, who holds a B.S. degree in mechanical engineering from North Carolina State University, joined Newport News Shipbuilding in 1927. Appointed assistant foreman of the ship shed department in 1935, he became foreman in 1944. In 1954 he was named assistant superintendent of the steel hull division, and in 1958 he became head of the division, after serving one year as production engineer of the company.

Mr. Davis became assistant general manager in 1962 and general manager in 1964. In 1965 he was elected a vice-president.

A past president of the Propeller Club, Port of Newport News, he is also a member of The Society of Naval Architects and Marine Engineers, the Welding Research Council and the American Society of Naval Engineers. He serves on the board of directors of the Virginia Manufacturers Assn., and is a life member of the National Defense Transportation Assn.

Mr. Plummer is a graduate of the Virginia Polytechnic Institute with a B.S. degree in mechanical engineering. He became affiliated with Newport News Shipbuilding in 1935. Appointed assistant superintendent of the machinery division in 1955, he was named superintendent in 1964. He became assistant general manager in 1966.

Mr. Plummer is a member of The Society of Naval Architects and Marine Engineers, the American Society of Naval Engineers and the Propeller Club.

Oceanic Plans Trade-In For C-1 Sampan Hitch

Oceanic Expose, Inc. of San Diego, Calif., would like to acquire the government-owned C-1 Sampan Hitch, now in the Reserve Fleet at Suisun Bay, Calif., in a trade-in transaction of its 50-year-old 2,333-gt lumber carrier, *Lumberlady*, built in 1919. The company has advised Maritime Administration that should the exchange be approved, it intends to convert the *Sampan Hitch* to a fishing and oceanographic support ship.

Lone Star Building Three River Towboats

Lone Star Marine Salvage Co., of Houston, Texas, is constructing three river towboats for stock purposes. Two of these towboats will be powered with a single-screw 275-bhp diesel and will be 37 feet in length; the third one will be powered with 700-total-bhp diesels and have dimensions of 66 feet by 22 feet by 9 feet.

Reynolds To Acquire Sea-Land Service, Inc.

The R. J. Reynolds Tobacco Company has announced plans to acquire McLean Industries, Inc., in a transaction that could involve the transfer of more than \$500-million in cash, according to a joint announcement by both firms.

Alex H. Galloway, president of Reynolds, and **Malcolm P. McLean**, president of the firm which operates Sea-Land Service, Inc., the nation's largest containership fleets, said in New York that they have agreed in principle on a plan to merge the two firms.

According to the agreement, Reynolds will pay \$50 for each of the 10,589,000 shares of McLean common stock outstanding.

Or, the announcement said, McLean shareholders may receive \$40 principal amount of 20-year, 7 percent subordinated debentures and $\frac{5}{8}$ of a warrant to purchase one share of Reynolds stock at \$47.50. The warrants would be exercisable for 15 years. The debentures could not be called for ten years but could be used in lieu of cash in exercise of the warrants.

McLean stock, which is listed on the New York Stock Exchange, has ranged between \$23 and \$50 during the last 12 months.

The tentative agreement is subject to the approval of the directors and stockholders of the two firms and, the two presidents said, leaves certain "important" but unspecified matters yet unresolved.

Reynolds, with sales of about \$1.2-billion and assets of more than \$1.24-billion, is among the nation's 70 largest firms. In 1967, McLean's operating revenue amounted to \$180.5-million and its assets \$232.5-million.

With this announcement, Reynolds becomes the latest of a number of large organizations to move into the maritime field without previous experience in it.

Peterson Trawler Bid Acceptable To MarAd

A bid by the Peterson Boatbuilding Company of Tacoma, Wash., to build two fishing trawlers, each at a cost of \$598,392, has been called "fair and reasonable" by Acting Maritime Administrator **James W. Gulick**. It was also estimated that it would cost \$333,000 to build the vessels in Japan, and so a \$265,392 construction subsidy for each of the two vessels was established.

The trawlers are to be built for Ann-B Inc., and Ildhuso Fisheries Inc., both of Seattle, Wash.

Webb Institute Included In Gulf Oil Grants

Webb Institute of Naval Architecture, Glen Cove, Long Island, N.Y., has received a \$1,500 grant for unrestricted use from Gulf Oil Corporation as part of the company's educational assistance program, which this year will distribute \$2,300,000 to students and institutions of higher education.

In addition to unrestricted grants, the other phases of Gulf's comprehensive program include scholarships to children of Gulf employees and dealers, matching of employee gifts to colleges, capital grants, departmental assistant grants, fellowships, and various special grants to colleges and universities.

Institutions eligible for unrestricted grants are those which are privately operated and controlled, and which obtain a major portion of their support from non-tax sources.

The check was presented to Rear Adm. **William Brockett**, USN (ret.), president of Webb Institute of Naval Architecture, by **Wessel C. Brodhead**, vice-president of the Marine Department of Gulf.

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Contrarotating Propeller Systems

The trend to larger and/or faster ships has shown a marked increase in recent years. This trend has focused a great deal of attention on the propulsion system and, in particular, on the propeller. While the total amount of power that can be transmitted to a given size of propeller has been the primary concern, there has also been a definite effort to improve the efficiency of the total propulsion system.

As noted by Mr. Budd, "it now appears that the majority of steam plants to be constructed in the next several years will have ratings in the 30,000- to 40,000-shp range with a few still larger plants. This increase in size does not introduce any fundamental problems to the steam-plant designer, nor to the manufacturer of boilers, geared steam turbines, and other plant components which can be supplied using present technology and manufacturing methods."

The naval architect does face the problem, however, of efficiently utilizing the higher power. As pointed out by Mr. Budd, the single-screw propeller, operating at reduced rpm, is more economical than twin-screw propulsion but even with draft and stern arrangement permitting, the absorption of higher shaft horsepowers can increase propeller-induced vibrations. This condition may limit the power which can be supplied to a single propeller.

Mr. Steele advised that contrarotating (c-r) propellers offer one attractive solution to meeting this need for higher power and more efficient ship propulsion. Recent model and full scale tests have indicated the magnitude of gains possible with slow rotational speed, single and c-r propeller systems. This gain was given as in the order of 8 to 15 percent. As Mr. Steele stated, an efficiency improvement of this magnitude cannot be overlooked unless efforts to realize it create serious compromises elsewhere in the system.

Mr. Steele listed two basic, functional problem areas to be resolved, namely:

1. Provide a power source capable of c-r output.
2. Provide a transmission system for c-r power from the source to the propellers and

still meet the system constraints. These are high reliability, low speed, high torque, support heavy propellers, seal against water leakage, etc.

The General Electric Company paper reported the first use of c-r propellers on full size ships as being on the submarine Jack and an experimental ship. This firm was involved in the design of these propulsion systems and reported: "The operational records of these shafting systems has been excellent with few operating problems. The only specific component failure, experienced early in the operational life, was the loss of the inner stern-tube bearings caused by plugging of water lubricating and cooling lines." This trouble was easily corrected. However, these ships did not use planetary gearing as was recommended during this symposium.

Mr. Hadler summarized the results of model tests conducted by the Naval Ship Model Basin on the tanker Manhattan with single- and twin-screw and c-r propellers, single-screw and c-r propellers on an American President Lines cargo ship and the Lykes sea barge carrier.

Observations from these model tests would indicate:

1. On full-formed ships, such as tankers, a reduction of 6 to 7 percent in horsepower can be expected. This conclusion must be hedged with the observation that no propeller aperture studies comparable to those on the APL ships have been made on a tanker.
2. On fine-formed ships the gains made by the c-r propellers are somewhat greater than for the tankers. These gains are due to interaction effects as much as to the recovery in rotational energy losses. Details of aperture and rudder location can have a marked effect upon performance.
3. On high-powered fine-formed ships the appended resistance of the twin-screw configuration is substantially greater than that of

the comparable single-screw configuration. This combined with the considerably lower propulsive coefficient of a twin-screw arrangement can result in a reduction in shaft horsepower for c-r propulsion as large as 25 to 30 percent.

4. The optimum diameter of a c-r propulsion system at a given rpm is somewhat smaller (10 percent on Manhattan) than that of a comparable single-screw propeller.

5. It appears from most of the tests to date that maximum efficiency is achieved when more of the power is put into the forward propeller.

The General Electric Company recently studied three possible gear configurations, namely, conventional offset first and second reductions, Figure 1; planetary first reductions—offset second reduction, Figure 2, and offset, (Continued on page 23)

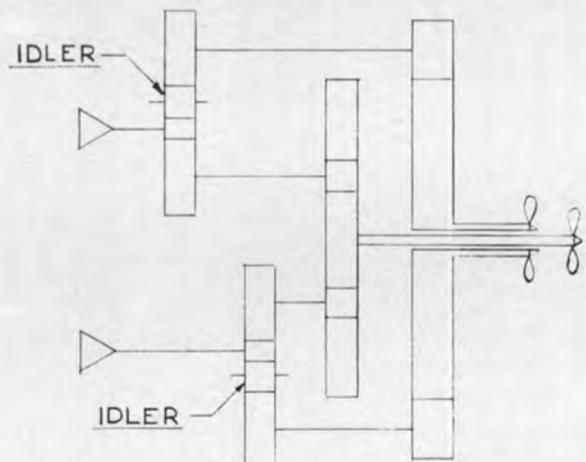


Figure 1—Parallel offset first and second reduction.

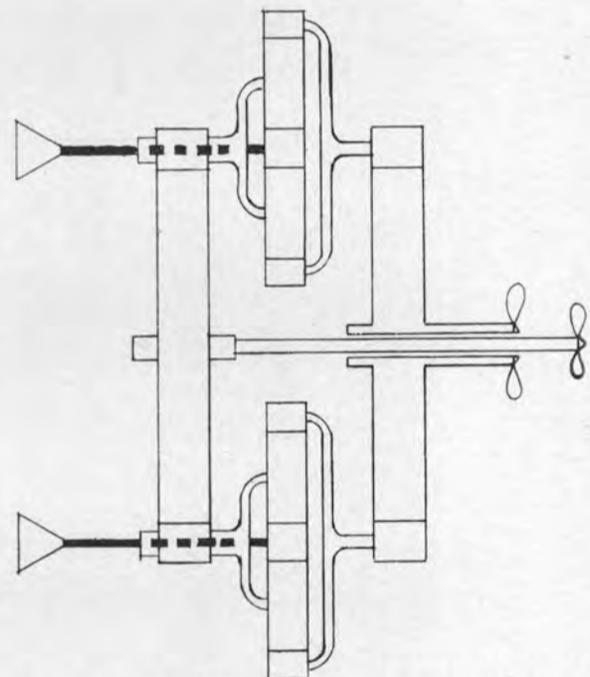


Figure 2—Planetary first reduction, parallel offset second reduction.

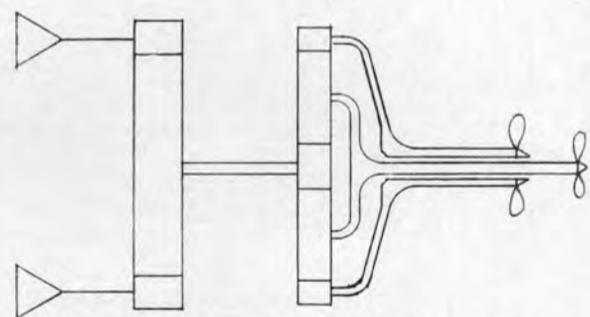


Figure 3—Parallel offset combining first reduction and planetary second reduction.

The Authors And Papers

This article is a summation of the papers presented at the recent joint meeting of the New York Metropolitan Section of The Society of Naval Architects and Marine Engineers and the Society of Marine Port Engineers New York on the hydrodynamic and mechanical aspects of contrarotating propellers. The papers and authors were:

"Propulsion Machinery Considerations for Contrarotating Propeller Systems" by **T. W. Steele**, Marine Turbine and Gear Department, General Electric Company.

"Design Concepts for a Contrarotating Propulsion System" by **S. A. Fielding**, Maritime Administration.

"Swedish Development of Contrarotating Propeller Systems for Turbine and Diesel Engine Drives" by **Dr. Ingvar Jung and Per-Erik Larsson**, Stal-Laval Turbine AB.

"Contrarotating Propeller Propulsion—A State-of-the-Art Report" by **J. B. Hadler**, Naval Ship Research and Development Center.

"Main Reduction Gears for Contrarotation" by **W. I. H. Budd**, DeLaval Turbine, Inc.

"Stern Gear and Line Shaft Systems for Driving Contrarotating Propellers" by **N. V. Laskey**, Camat Transportation Consultants, and **J. M. Gruber**, Waukesha Industries.

Table 1—Comparison of Three C-R Gear Systems (Rating—36,000 hp @ ±90 rpm)

	Offset 1st Reduction, Planetary 2nd Red.	Planetary 1st Reduction, Offset 2nd Reduction	Offset 1st And 2nd Reduction
Arrangement	3	2	1
Estimated weight—10 ³ lbs.	171	370	500
No. of rotor meshes	8	16	10
No. of toothed rotors	8	16	14
No. of journal brgs.	13	18-22	28

Contrarotating Propeller Systems

(Continued from page 18)

combining first reduction and planetary second reduction, Figure 3. A comparison of the three alternates is given in Table 1.

DeLaval Turbine Inc. has studied, among others, two basic arrangements of epicyclic gears, each having a single output shaft in line with the single input shaft. A planetary gear, Figure 4, is obtained when the orbit ring is held stationary. A star gear is generally similar except that the star carrier is fixed, Figure 5.

Stal-Laval has studied for a number of years the gearing for contrarotation in conjunction with the Swedish shipbuilding industry. Some of the gear combinations studied have been: where each propeller is driven by its own turbine, Figure 6; a driving arrangement where the propeller speeds are set by the gear ratio of the connecting gear, Figure 7, and where the gearing acts like a differential and sets a constant torque ratio between the propellers, Figure 8. The final gearing arrangement chosen for the project study consists of two single-plane parallel shaft gears and a pair of epicyclic primary gears, Figure 9.

The results of extensive model tests as studied by De Laval Turbine have shown that for a typical large tanker, the propulsive coefficient was sensitive to torque balance and that the efficiency was at, or near, maximum when the forward propeller absorbed 30 percent more torque than the aft propeller and the speeds of the shafts were equal. A significant portion of the gain due to contrarotation may be lost if the torque and speed balance is not correctly chosen.

However, Mr. Budd reported model testing of a cargo-ship hull form showed much less sensitivity to torque distribution. In this case, the optimum efficiency was achieved with 10 percent less torque on the forward wheel and with equal shaft speeds.

Still other unpublished model test results tend to suggest that for optimum performance, the forward propeller will absorb more torque with conventional lines, whereas the aft pro-

PELLER will absorb more torque with a skeg and cutaway lines.

The design study conducted with respect to the provision of a line-shaft and stern-gear system for driving c-r propellers, originally selected for the Lykes sea barge carrier, has brought to light a number of design features which require special consideration, according to Messrs. Laskey and Gruber in their paper. This exercise has shown that it is entirely feasible to construct a stern-gear and line-shaft system suitable for driving c-r propellers capable of absorbing a combined total of 36,000 shp.

The inner and outer line- and tail-shafts can be of fabricated construction and the use of babbitt-lined bearings throughout, in association with rotary tail-shaft seals, present no special problems, and neither does lubrication of the stern gear and line-shaft bearings.

From the work to date Mr. Hadler drew the following conclusions:

1. The greatest potential for pay-off on the c-r system is for the high-powered fine-formed ships where the only current alternative is a twin-screw configuration. Reductions of shaft horsepower in the order of 25 to 30 percent are probable.

2. In order to achieve an efficient design a comprehensive program of model testing is required involving hull-rudder-propeller configuration changes.

3. The stopping characteristics of the c-r propulsion system are at least equal to, if not somewhat better, than a single-screw configuration of comparable power.

4. On high-powered fine-formed ships where there are sharp circumferential wake gradients, the cavitation erosion problem should be less severe on c-r propellers than for the single screw configuration of comparable power.

5. The total vibratory forces generated by each propeller are probably about half those for a single-screw propeller with comparable number of blades.

Messrs. Laskey and Gruber reached the following conclusions in their paper:

1. It may be prudent to adopt non-synchronous c-r speeds for the inner and outer shafts in the first application of c-r propellers in order to obtain operating experience with c-r bearings before synchronous contrarotation shaft speeds are adopted.

2. The use of hollow, split sections of outer line shaft is not advisable and, instead a torque-tube coupling should be used.

3. Serious consideration should be given to the use of a four-bladed forward propeller and a five-bladed after one.

4. In order to prevent impingement of tip vortices from the blades of the forward propeller on the tips of the after propeller, the diameter of the after propeller must be smaller than the diameter of the forward one.

Messrs. Jung and Larsson feel that "the future of c-r propellers rests solely on sound mechanical solutions to the transmission problems. We are confident that the development step to be taken is no bigger than any other in the development of ship propulsion."

Mr. Budd concluded that "contrarotation offers an attractive gain in propulsive efficiency and therefore a reduction in operating costs, particularly with high power and restricted draft."

"Although there are design and development problems which must be given careful consideration, there appears to be no fundamental reason why solutions cannot be found and suitable gearing can be designed and manufactured with every expectation of maintaining present standards of reliability and performance in service."

Mr. Steele summarized his paper by stating

"The c-r propeller system for high-powered ships offers an attractive option to the ship-owner in terms of reduced power requirements and fuel consumption. When the c-r drive is provided by a second reduction planetary gear, an additional gain is realized through lower machinery weight and more flexibility in arrangement. It is recognized that some additional risks are incurred with the use of new and somewhat more complicated equipment; however, in this instance the economic gains seem to far outweigh such risks. Many of the vital components that comprise a c-r propeller drive system have had the benefit of several years' successful sea experience. The main engines and their controls would not be altered or affected by adaptation to a c-r propeller drive system. The components can be designed with sufficient conservatism to assure long life and no increase in machinery maintenance."

Mr. Fielding, who described a particular design, feels that the developments to date both in design and manufacture have indicated that the c-r system is practical and that this effort has resulted in refinements in details. He does indicate that in certain areas, such as astern propulsion, further study would be a matter of interest.

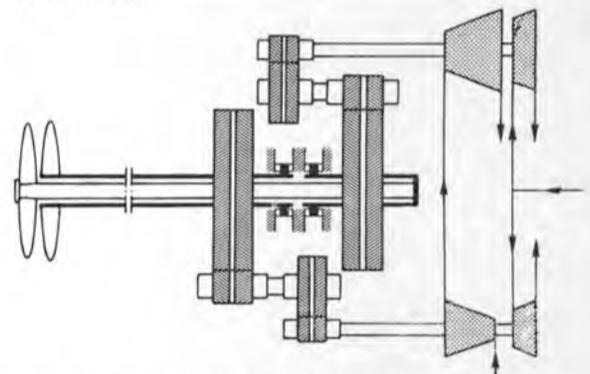


Figure 6—Each propeller is driven by its own turbine.

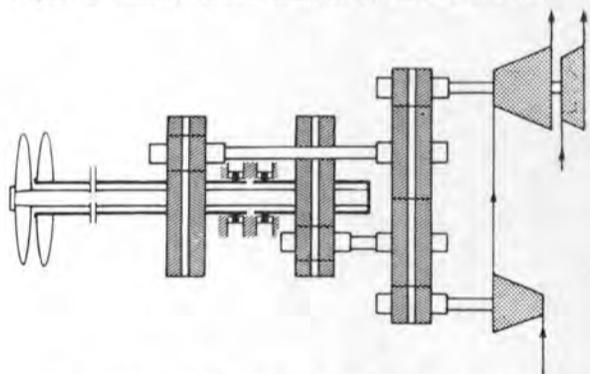


Figure 7—Propeller speeds are set in this design by the gear ratio.

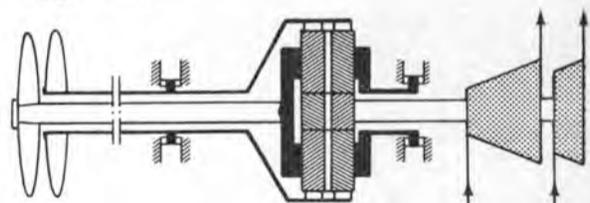


Figure 8—Gearing sets constant torque ratio between propellers.

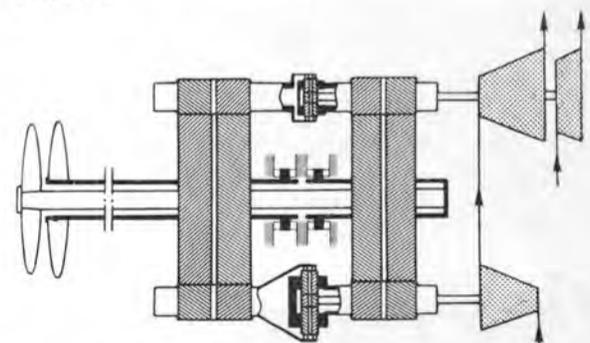


Figure 9—Two single-plane parallel shaft gears and pair of epicyclic primary gears.

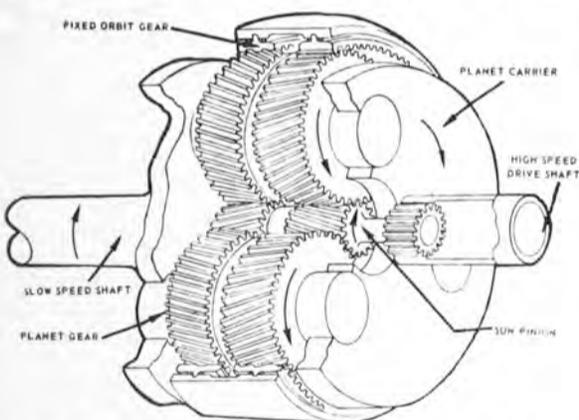


Figure 4—Planetary arrangement with the orbit ring held stationary.

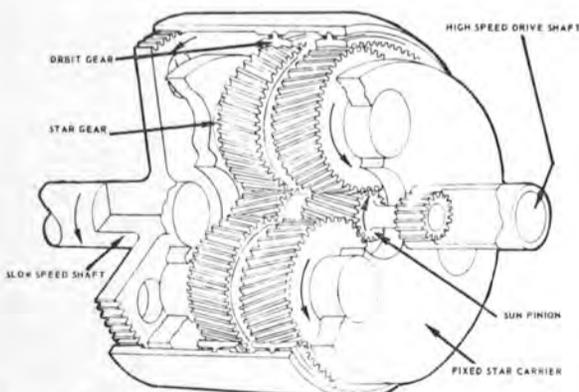


Figure 5—Similar to Figure 4 except the star gear carrier is fixed.

SNAME Announces Committee Chairmen

James J. Henry, president of the 9,000-member Society of Naval Architects and Marine Engineers and president of the J. J. Henry Co., has announced the appointment of the following committees of the Society for 1969:

Committee on Applications—chairman, Rear Adm. L. V. Honsinger, USN (ret.), vice-president-shipbuilding, Todd Shipyards Corporation, New York, N.Y.

Committee on Awards—chairman, Andrew Neilson, chairman of the board and president, American Bureau of Shipping, New York, N.Y.

Annual Banquet Committee—chairman, Barton B. Cook Jr., vice-president, De Laval Turbine Inc., Trenton, N.J.

Annual Dinner Dance Committee—chairman,

Lindsay A. Lovejoy, manager, Industrial Sales Div., General Electric Co., New York, N.Y.

Committee on Endowment Fund—chairman, Wm. C. Freeman, general manager-Marine Dept., Combustion Engineering, New York, N.Y.

Committee on Finance and Audit—chairman, James H. Sharp, retired.

Committee on Journal of Ship Research—chairman, Phillip Eisenberg, president, Hydro-nautics, Incorporated, Laurel, Md.

Committee on Marine Technology—chairman, E. Scott Dillon, acting chief, Office of Ship Construction, Maritime Administration, Washington, D.C.

Committee on Membership—chairman, Lester Rosenblatt, president, M. Rosenblatt & Son, Inc., New York, N.Y.

Committee on Nominations—chairman, Donald A. Holden, chairman of the board, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., and past president of the Society.

Committee on Papers—chairman, Richard B. Couch, director of engineering, General Dynamics Corp., Quincy, Mass.

Committee on Pension Plan—chairman, William H. Jory, retired.

Committee on Publications—chairman, Matthew G. Forrest, executive vice-president, Gibbs & Cox, Inc., New York, N.Y., and past president of the Society.

Committee on Public Relations—chairman, John R. Blackeby, assistant secretary, American Bureau of Shipping, New York, N.Y.

Committee on Scholarships—chairman, Frank L. Pavlik, Sun Shipbuilding & Dry Dock Co., Chester, Pa.

Committee on Sections—chairman, Hollins-head de Luce, manager, ship development and sales, Bethlehem Steel Corp., New York, N.Y.

Committee on Ways and Means—chairman, Rear Adm. Albert G. Mumma, USN (ret.), chairman, Worthington Corp., Harrison, N.J., and past president of the Society.

Steering Committee for the 1970 Spring Meeting—chairman, Robert Taggart, Robert Taggart Incorporated, Fairfax, Va.

The 1969 Technical and Research Committees are to be announced at a later date.

Seatrains Lines To Lease Brooklyn Naval Shipyard— Will Build Large Ships

Seatrains Lines, Inc. is planning to enter the shipbuilding business. According to announcements made recently in New York and Washington, D.C., 45 percent of the defunct Brooklyn Naval Shipyard will be leased by New York City to Seatrain Lines. This part of the shipyard includes the two largest shops, four drydocks and several piers.

Howard M. Pack, Seatrain's president, said that his firm is in the large-ship business and that the Navy yard facilities are suited for building tankers up to 200,000 dwt. Emphasizing this thought, Mr. Pack said that the firm has intentions of building two large ships immediately. He said that Seatrain would begin a development and building program that could total \$41-million during its first 18 months of operations.

Seatrains plans to invest \$15-million in the shipyard. This would include \$9-million for facilities and \$6-million for working capital. The company will receive a federal loan from the Economic Development Administration to help defray initial start-up costs. In addition, EDA will guarantee 90 percent of the \$6-million loan the company will take to provide working capital.

Under the arrangement worked out between New York City and the government, the city will buy the entire naval shipyard complex. In turn, the city will lease the facilities in full to the Commerce Labor Industry Corporation of Kings County. The latter organization will lease part of the facilities to Seatrain Lines.

Seatrains Lines is a worldwide operator of more than 50 containerships, oil and grain tankers, and multi-purpose military cargo vessels. The company owns the 115,000-dwt tanker Manhattan, the largest commercial American-flag ship.

Navy Awards Uniflite \$1-Million Contract

A fixed price contract of \$1,035,165 was awarded to Uniflite, Inc., Bellingham, Wash. by the Navy for twenty-two 31-foot patrol boats. The contract number is N00024-69-C-0276.

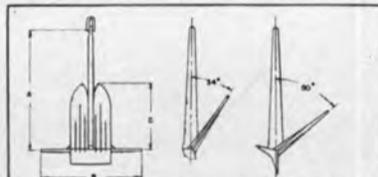


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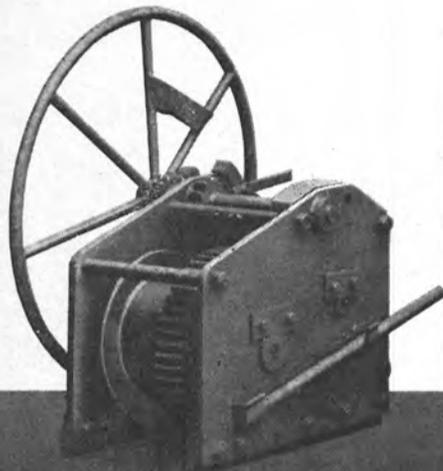
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186	197	113	12000	3
204	224	126	15000	3 1/2
210	230	129	20000	3 3/4
226	246	137	25000	4
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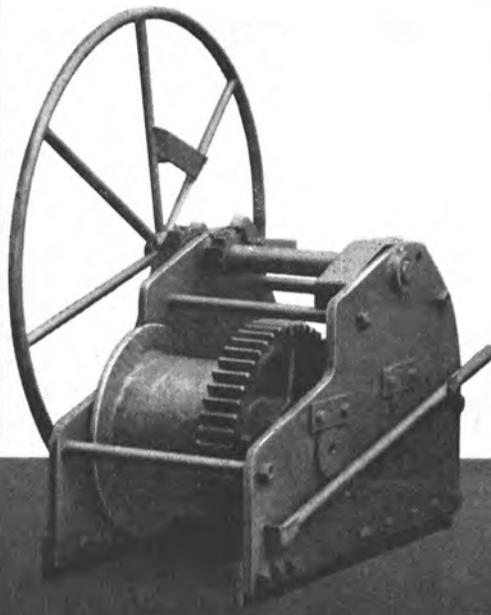
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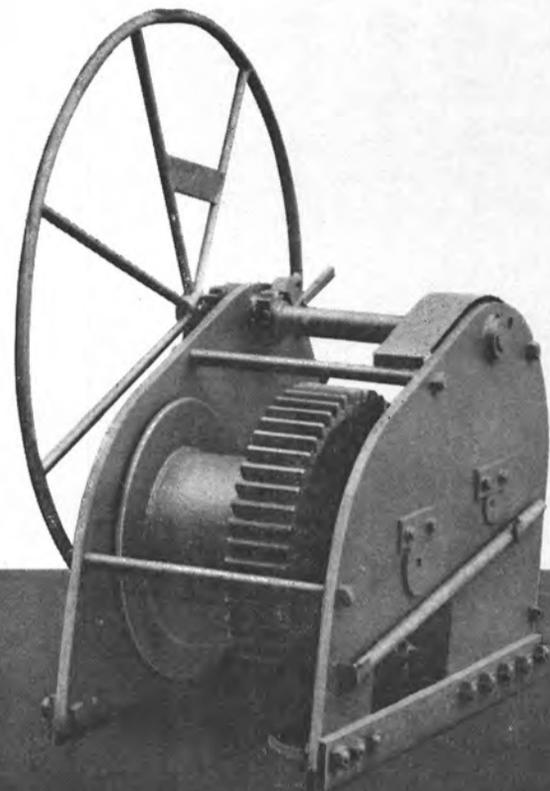
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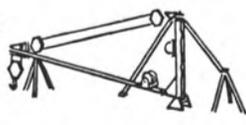


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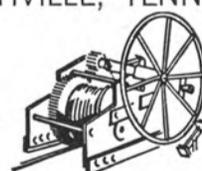
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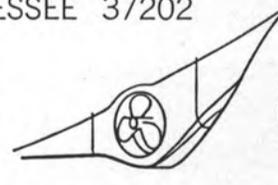
• Deck Hardware



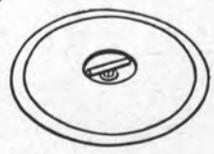
• Hose Cranes



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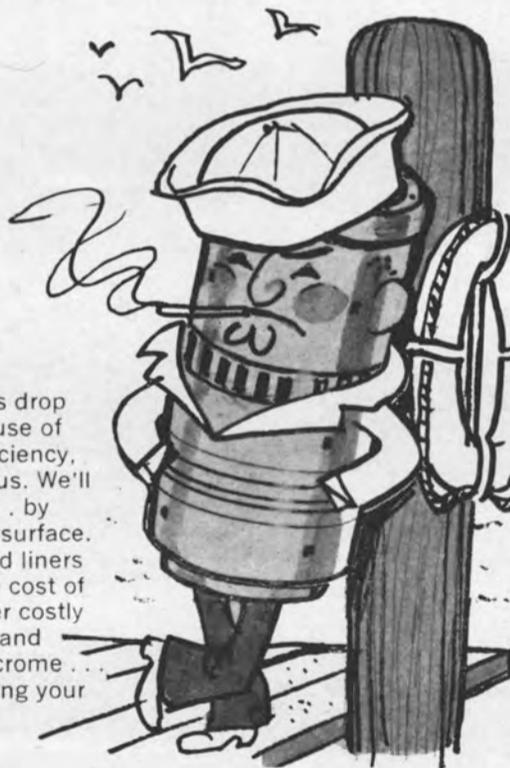


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**Brush And Fraser Appointed
Vice-Presidents Of Fraser Yard**



Theodore J. Brush



Robert W. Fraser

Promotion of two Superior, Wis., shipyard supervisors to positions as vice-presidents of Fraser Shipyards, Inc., was announced following a meeting in Cleveland of the board of directors of LST Corporation, owners of the shipyard. The announcement was made by Robert H. Lucas, firm president.

Theodore J. Brush, who has been general superintendent of the Superior yard for the past five years, was named vice-president and general superintendent of production, while Robert W. Fraser, who has held supervisory positions in the shipyard since he joined the staff in 1962, now becomes vice-president and assistant general superintendent.

**Senior Engineers Schedule
Sixth Annual Symposium**

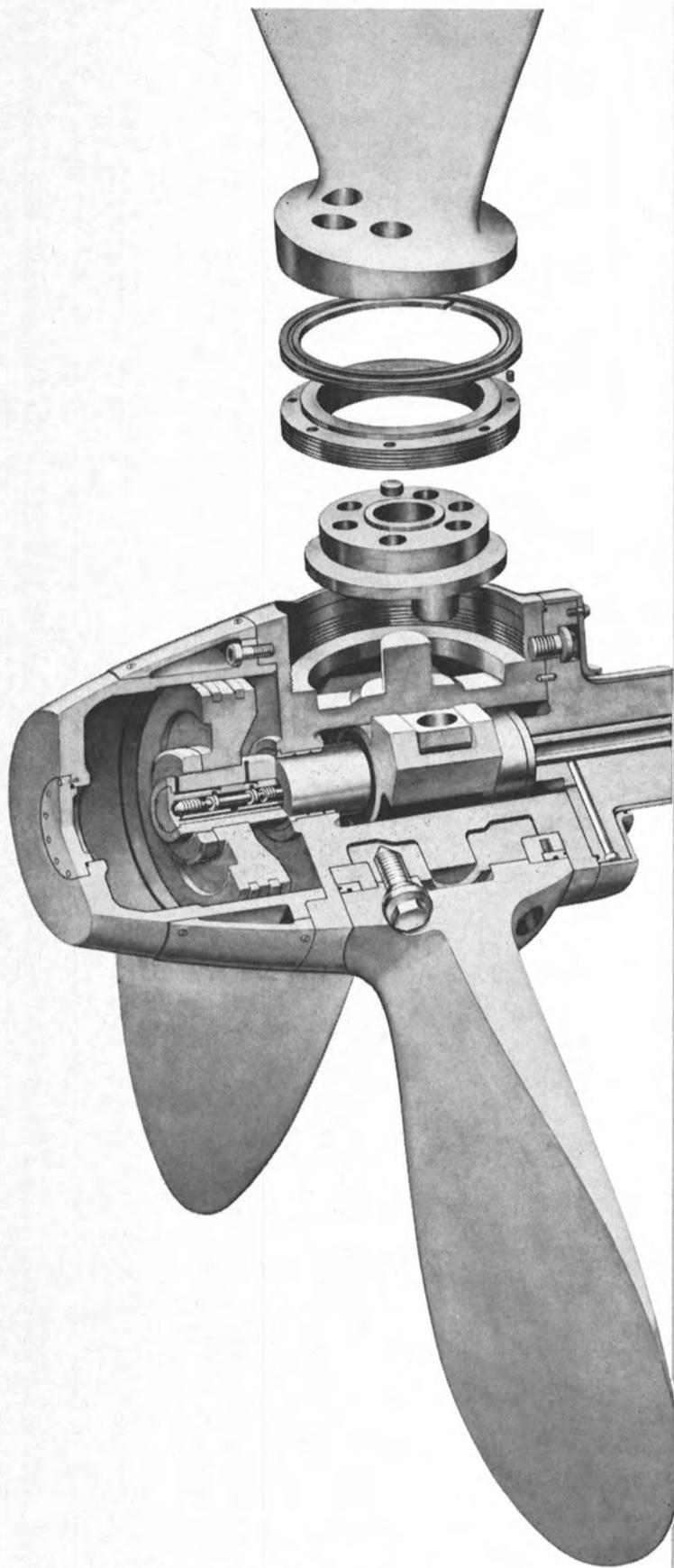
The Association of Senior Engineers of the Naval Ship Systems Command has announced that its Sixth Annual Technical Symposium will be held on March 28, 1969. The symposium, to be held at the Statler Hilton Hotel in Washington, D.C., has as its theme "Variety in Ship Engineering."

As in previous years, the technical sessions will start at 4:30 p.m. and will be followed by the banquet at 8:00 p.m.

Reservations may be made through Jon R. Buck, Association of Senior Engineers, Naval Ship Engineering Center, SEC 6162, Room 4646 Main Navy, Washington, D.C. 20360 (tel. OXford 6-5550).



UNIQUE SIGHTSEEING BOAT, reported to be the largest boat built of molded fiberglass in this country, recently sailed from California to Hawaii where it is now in service. Designed by Blaine Seeley & Associates, Newport Beach, Calif., and built by Willard Boat Works, Costa Mesa, Calif., the 64-foot, 9-inch boat is certified by the Coast Guard for carrying 149 passengers. There are 16 bottom-viewing windows. Willard Boat Works developed a 'disposable' tooling technique that made it practical to build one of a kind. It is powered by two Perkins six-cylinder turbocharged 160-hp diesel engines driving Equi-Quad four-bladed propellers. The fiberglass was supplied by Owens-Corning Fiberglass Corporation and United Merchants and Manufacturers. The bilges are filled with urethane foam giving a positive flotation of over 50,000 pounds. This foam was manufactured by C.P.R. Division of Upjohn Company. The propeller shafts ride in rubber shaft bearings made by BJ Marine Bearings of Borg-Warner.



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ELECTRICAL INSTALLATION PRACTICES in naval ships were discussed at the recent meeting of the Philadelphia Section of The Society of Naval Architects and Marine Engineers, held in the Philadelphia Engineers Club. The paper, entitled "Modern Aspects of Electrical Installation in Naval Ships," was presented by **Donald S. Place**, Command and Surveillance Division, Naval Ship Engineering Center, Washington, D.C. He was assisted in his presentation by **W. S. Patchell**, chief electrical engineer, Philadelphia Naval Shipyard. This was a joint meeting with the Institute of Electrical and Electronic Engineers. Shown above at the meeting are, left to right: **Wm. O. Whitaker Jr.**, general manager, Nuclear Service & Construction Company, Camden Division; **John H. Lang**, electrical engineer, Philadelphia Naval Shipyard; **S. Frank Dovi**, electrical engineer, Nuclear Service & Construction Company; **Mr. Patchell**; **Mr. Place**; **Gordon H. Boyd**, Philadelphia Section chairman, and **Raymond G. Lepone**, chairman of the Marine Transportation Group of I.E.E.E.

NYSA Appoints Barlow Safety Bureau Director



Capt. George D. Barlow

Adm. **John M. Will**, president of the New York Shipping Association, Inc. and chairman of the board of the American Export Isbrandtsen Lines, has announced that the Association's board of directors has appointed **Capt. George D. Barlow**, director of the NYSA Safety Bureau.

He succeeds **Capt. G. H. E. Buxton** who has headed the Bureau since its formation in 1952 and retired at the year end. In making the announcement, Admiral Will said, "We regret to see **Captain Buxton** leave after so many years of outstanding service to the industry in the field of safety, but are confident that in **Captain Barlow** we have chosen a worthy successor."

Alexander P. Chopin, NYSA chairman, said "Captain **Buxton** has done an excellent job during his term of office in safety education and waterfront accident prevention, as indicated by the steady reduction in the accident rate that has taken place.

"We are confident this progress will continue at an efficient and expanding level under **Captain Barlow**, who has served as assistant director to **Captain Buxton** for the past eight years."

Captain Barlow joined the Safety Bureau in 1952, shortly after its formation. He graduated from the U.S. Merchant Marine Academy in 1943 and served as an officer for

some years with the Weyerhaeuser Steamship Company. Before joining the Safety Bureau he was associated with the Lumbermen's Mutual Insurance Company as a safety engineer. **Captain Barlow** is widely known in maritime safety and insurance fields. He has lectured before the marine accident prevention course at New York University as well as before technical societies and at the State Maritime College at Ft. Schuyler.

He is the author of several papers and studies on stresses and strains in ships' gear and has been an active, participating member of the Marine Section of the National Safety Council, serving for four years as editor of the Marine Section member newsletter.

Swan Hunter Group Expands Management

Sir **John Hunter**, C.B.E., chairman and managing director of the Swan Hunter Group Limited, has announced the following new appointments to meet the expanding activities of the Group:

T. McIver, C.B.E., deputy managing director, to be joint managing director.

N. S. Thompson, a member of the parent board, to be deputy managing director.

Alco Engine Receives Orders For Diesels Worth \$1.5-Million

J. J. McCarthy, marketing manager of Alco Engine, Inc., Auburn, N.Y., has announced the receipt of two orders for Model 251 diesel engines, totaling approximately \$1.5-million.

Seven Alco Model 251 12-cylinder engines have been purchased by Ingalls Shipbuilding for use in shipboard generating service on cargo ships of the American President Lines.

An order from Bechtel Corporation includes two of Alco's new 3,840-hp, 18-cylinder diesel engines for use in emergency shutdown power at Palisades Nuclear Power Plant of Consumers' Power Company.

In making the announcement, **Mr. McCarthy** stressed the growing acceptance of Alco's Model 251 engine for stationary and marine use. "Although, as has been announced, Studebaker-Worthington is seeking a buyer for Alco Engine, Inc.," said **Mr. McCarthy**, "we will continue to serve our present customers and vigorously seek new ones both now and after such sale."

Texas Gas Elects Blaske Vice-President



Floyd H. Blaske

Floyd H. Blaske, chief executive officer of the Inland Waterways Services Division of Texas Gas Transmission Corporation, has been elected a vice-president of the company, **W. M. Elmer**, chairman of the board, has announced.

Mr. Blaske is president of the Texas Gas subsidiary American Commercial Barge Line Company and its related companies. He is a graduate of Central College in Missouri, and began his association with Texas Gas on May 15, 1968, when he was elected to the board of directors.

The Inland Waterways Services Division of Texas Gas operates the largest river transportation complex on the inland waterways system. Texas Gas also operates one of the nation's major natural gas pipeline systems, and has major interests in providing over-the-highway trucking services, offshore dredging and marine construction, gas- and oil-well drilling and reconditioning services, and exploration for and production of natural gas and oil.

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Chesapeake Section, SNAME, Honors Admiral Jerry Land On 90th Birthday



Attending the Chesapeake Section meeting honoring Vice-Adm. Jerry Land were, left to right: L. D. Cathers, immediate past chairman, Chesapeake Section; James J. Henry, president, SNAME; Hollinshead de Luce, manager, ship development and sales, Bethlehem Steel Corporation; Comdr. V. W. Rinehart, U.S. Coast Guard, author; Comdr. E. L. Parker, U.S. Coast Guard, author, and R. Taggart, chairman, Chesapeake Section.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers, held its January technical meeting at the Washington Navy Yard Officers' Club. Because the meeting fell on the 90th birthday of Vice-Adm. Jerry Land, the Section designated this session as Jerry Land night, honoring Admiral Land with a testimonial and a book of congratulatory letters. Unfortunately, Admiral Land was in the hospital and, therefore, not able to attend, but was nevertheless honored in absentia.

Among those paying tribute to Admiral Land were J. J. Henry, president of the Society; past Presidents D. A. Holden and Rear Adm. R. K. James, USN (ret.); as well as several recipients of the Vice-Adm. "Jerry" Land Medal

and many other outstanding members of the marine community.

Following the ceremony honoring Admiral Land, the large audience was privileged to hear a presentation and discussion of the paper, "Concept Formulation for National Data Buoy System," by Comdr. V. W. Rinehart and Comdr. E. L. Parker, U.S. Coast Guard.

On November 15, 1967, the Coast Guard, with the approval of the Department of Transportation, was selected by the President's Marine Science Council to undertake the research, development, testing and evaluation necessary for the implementation of the National Data Buoy Systems. This effort was to be approached from the standpoint of a total system to meet the broad mission requirement of collecting

marine environmental data synthetically—with specific requirements as to accuracy and geographic and temporal spacing—and to transmit this data to processing centers and users in a rapid and reliable manner.

Four major subsystems were identified as making up the National Data Buoy System: data gathering system, ocean platform system, seaborne support system and shore support system.

This paper examines the approaches taken in developing the system concepts and alternative hardware configurations for the initial cost/time/performance and system effectiveness analysis. It also discusses the problems that remain and the intended technical approach for their solution.

A spirited discussion followed the presentation of the paper.

William H. Meyle Jr. Elected President Of Independent Pier

The board of directors of Independent Pier Company, Philadelphia, Pa., has announced the election of William H. Meyle Jr., as president of the company.

Other officers elected by the board of directors are: William Meyle Sr., chairman of the board; Kenneth Meyle, vice-president; Ralph Arizini Jr., treasurer and comptroller; and Herman Meyle, secretary.

Independent Pier Company and its affiliated companies are engaged in stevedoring, towing, steamship terminals, lighterage and 24-hour high-speed diesel launch service. Its facilities are located at Pier 34 South; Pier 55 South and Pier 2 Girard Point.

Zapata Norness Reports Large Gains In Sales And Net Earnings

Sales and net earnings of Zapata Norness Incorporated increased substantially in the first quarter of fiscal 1969, ending December 31, 1968, to the highest level in the company's history, according to an announcement made by the firm in Houston, Texas.

Earnings increased 224 percent to \$4,361,000, from \$1,348,000 in the comparable period a year ago. Net earnings per share of common stock computed on a residual basis, increased 157 percent to \$.95 a common share, from \$.37 a year ago.

Sales increased to \$46,798,000 from \$11,106,000 a year ago.

The company attributed the sales and earnings increase to contribution by new acquisitions, substantial new capital assets completed and put to work by the company, and to completion of redeployment of a substantial portion of its offshore drilling fleet to foreign areas and commencement of contract work therein.

Johannessen Of Mobil Elected President Circumnavigators Club

J. E. Johannessen, general sales manager, marine trade department, Mobil Sales and Supply Corporation, has been elected president of the Circumnavigators Club.

The club was established in 1902 to extend friendly contacts among men who go to the ends of the earth.

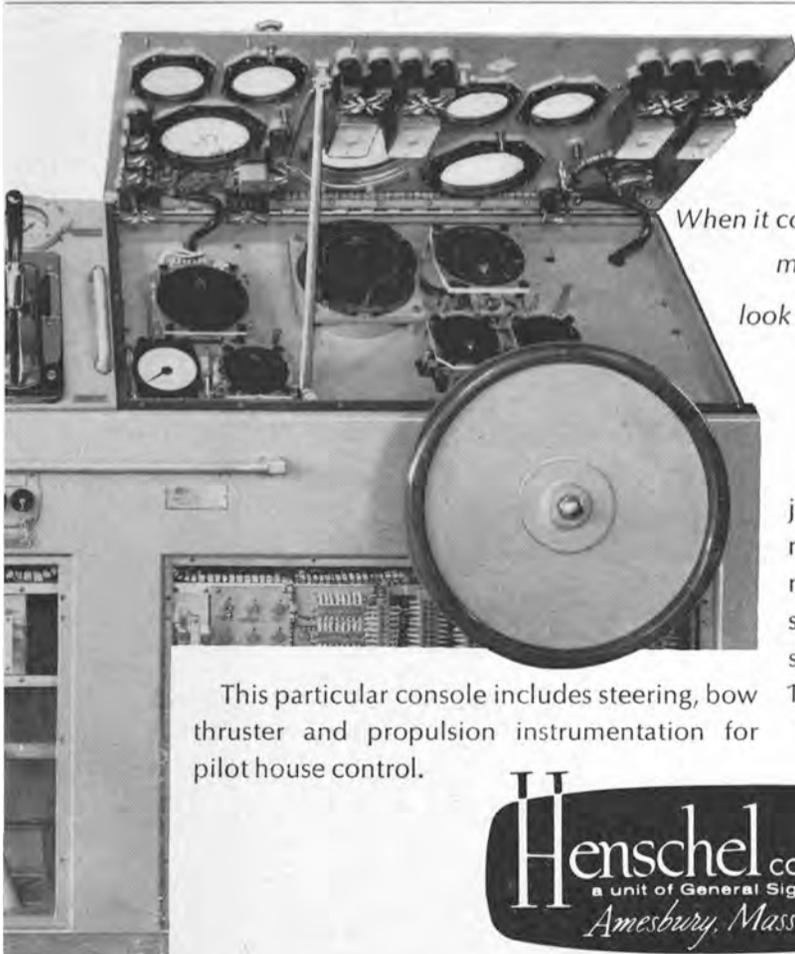
There are two requirements for membership. First, a Circumnavigator must cross all the meridians of longitude traveling in one direction and returning to the starting place. Second, he must be invited to join and be approved by the membership committee.

Many distinguished men have been Circumnavigators, including William Howard Taft, Herbert Hoover, Douglas MacArthur and Francis Cardinal Spellman. Rear Admiral Peary, who discovered the North Pole, qualified by walking around the Pole. Capt. James Calvert circled the North Pole under the ice in the nuclear submarine USS Skate. Captain Beach qualified by following the route of Magellan under water in the nuclear submarine Triton. John Glenn made the great circle in his historic capsule flight in space.

Buenger Appointed Long Beach Manager By States Steamship

William Buenger has been appointed manager for States Steamship Company at Long Beach, Calif., it was announced by Capt. J. W. Dickover, vice-president for States.

Mr. Buenger succeeds Charles A. Jones, who is retiring after 20 years of service to the company.



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Tanker Owners Name Malcolmson Director Of Pollution Federation



James V. C. Malcolmson

The International Tanker Owners Pollution Federation Ltd. has established an office in London with James V. C. Malcolmson as managing director.

Mr. Malcolmson is a former vice-president, marine department of Texaco. He was also a surveyor for Lloyd's Register of Shipping, in Liverpool, and senior surveyor in Philadelphia.

The federation has been organized by a number of tanker owners as a voluntary scheme to repay government and tanker operators for the cost of dealing with oil spillages.

It will come into force when 50 percent of the privately owned segment of the world's tanker fleet is enrolled. The original sponsoring groups—BP, Esso, Gulf, Mobil, Shell, Socal, and Texaco—account for about 30 percent.

Mr. Malcolmson said that the first objective was to get as many tanker owners as possible to join. The federation is open to any oiler power—whether a private or government operator.

While this group will administer the plan, liability payments for clearing up minor spillages or pollution disasters will be made by a subsidiary organization, the Bermuda-based International Tank Indemnity Association.

Every member of the federation will be required to register its tonnage with the association.

The participants will be covered for losses up to a maximum of \$100 for each gross registered ton for a tanker-spillage incident, with a maximum of \$10-million coverage for each ship in each incident.

Mitsui Launches Twenty-Eight Ships For Record In 1968

During the calendar year of 1968, Mitsui Shipbuilding & Engineering Co., Ltd. launched a total of 28 ships having an aggregate deadweight of 1,449,602 tons. These launchings were performed by Mitsui's three shipyards—Tamano Works launched 12 ships, Chiba Works 6 ships and Fujinagata Works 10 ships. Of the total, 20 ships were for export and eight for domestic owners.

The 1968 record surpassed the 1967 record by nine ships totaling 325,974 dwt.

Two Container Cranes Ordered From Paceco For U.S. And Canada

Paceco, a division of Fruehauf Corp., has been awarded contracts for mobile container-handling gantry cranes by Canadian National Railway Co. of Montreal and Transocean Gateway Corp., New York City.

The 'Transtainer' crane for Can-

adian National Railway will be used for container and piggyback service at CNR's Toronto yards. The Transocean 'Transtainer' will be used for container-handling operations at the company's Long Beach, Calif., marine terminal. Delivery of the units is scheduled for June.

Both cranes will have a 40-ton capacity and a mammoth 74-foot span capable of straddling two

roadways and two railroad tracks at a time, or six rows of containers plus roadway. The crane for Toronto, which will be designed by Paceco at Alameda, Calif., and built in Canada, will handle both top-lift containers and bottom-lift trailers and stack containers three high. The crane for Transocean at Long Beach will be designed for container handling only and will stack four high in the yard.



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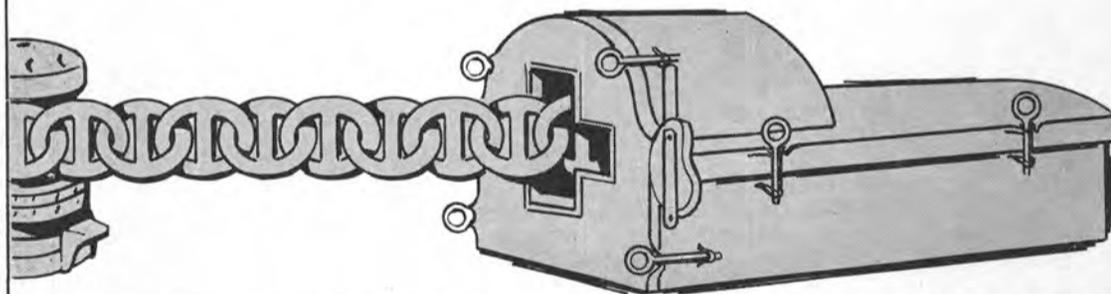
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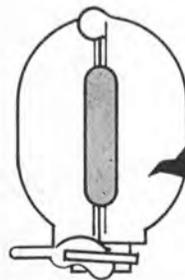


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Dravo-Built Locks To Accommodate 16 Jumbo Barges And Towboat



Aerial photo shows the newest locks in a series constructed on the Ohio River.

Final inspection of construction work on the \$24.3-million Newburgh Locks, located between Evansville, Ind., and Owensboro, Ky., on the Ohio River, is scheduled this spring by the U.S. Army Corps of Engineers.

The contractor, Dravo Corporation, Pittsburgh, expects to complete final clean-up and site work on schedule early this year.

The locks consist of two 110-foot-wide chambers, one 1,200 feet long and the other 600 feet long. The two chambers are formed by a land and guide wall 1,638 feet long; a middle wall 1,644 feet long and a 3,843-foot-long river wall.

Bidding for construction of the high-lift dam at Newburgh is scheduled for May.

Both projects are part of the Corps of Engineers' long-range modernization plan for Ohio River navigation. The program calls for 19 lock and high-lift dam installations to eliminate 46 obsolete facilities.

After Newburgh Dam is built, Lock and Dam Nos. 46 and 47 at Owensboro and Evansville will be removed and Newburgh Locks and Dam will be the only navigation

and flood control structures in a 120-mile stretch of river from Uniontown, Ky., to Cannelton, Ky.

Newburgh Locks will provide for an 18-foot lift to river traffic. The longer lock will permit locking a towboat and as many as 16 jumbo barges in one maneuver. This one-time locking compares with two or three lockings required at older, smaller locks, saving barge tows considerable locking and navigation time.

Some 540,000 cubic yards of concrete and more than 4-million pounds of reinforcing steel were required for the new locks, according to Dravo Project Superintendent Frank E. Blake Jr.

Fifty-five percent of the concrete—296,626 cubic yards—was placed during the four month period of July-October 1967. August 1967 was the project record month, when 80,928 yards of concrete were placed.

Common excavation of 514,000 cubic yards and rock excavation of nearly 200,000 cubic yards was completed in January 1967. Miter gate erection was finished in July 1968, and the cofferdam was flooded the following month.

R. Kaufman Joins Deepsea Ventures As Vice-President



Raymond Kaufman

Raymond Kaufman has joined Deepsea Ventures, Inc., Newport News, Va., as vice-president-technical, according to a recent announcement. Deepsea Ventures, a subsidiary of Tenneco, Inc., is a contract research and development firm set up to find and evaluate undersea resources.

Prior to assuming his responsibilities with Deepsea Ventures, Mr. Kaufman was vice-president and technical director of M. Rosenblatt & Son, New York naval architectural firm.

Mr. Kaufman has degrees in mechanical engineering from City College of New York, naval architecture and marine engineering from the University of Michigan, mathematics from the University of

Michigan, and a master's degree in mechanical engineering from New York University. He is a registered professional engineer, a member of The Society of Naval Architects and Marine Engineers, and a member of the Society of Aeronautical Weight Engineers.

T.C.O. Acquisition Of Delta Steamship Approved By MSB

The Maritime Subsidy Board has cleared the way for T.C.O. Industries Inc., to exercise control over Delta Steamship Lines Inc., which it has by virtue of its ownership of 98 percent of the subsidized line's common stock.

The Maritime Subsidy Board, in effect, approved the acquisition of Delta's shares, and ruled that T.C.O., formerly Transcontinental Bus Lines, could assert control over the company once it agrees to comply with all of Delta's obligations under the 1936 Merchant Marine Act and its subsidy contract with the government.

Delta, about the ninth largest of the 14 U.S. flag subsidized berth operators, maintains freight and combination freight-passenger service between the U.S. Gulf and the east coast of South America and between the U.S. Gulf and Atlantic ports and West Africa. It makes between 63 and 80 subsidized sailings a year.

Sun Ship Announces Plans For New Engineering Building



Artist's rendering of the new Sun Ship engineering and administrative building.

Sun Shipbuilding & Dry Dock Company, Chester, Pa., recently announced that they are proceeding with engineering and planning for the construction of an additional modern, two-story office building. Definite plans to proceed will not be concluded until contractors' bids are received and financing is arranged. Speaking on behalf of Sun Ship, Robert Galloway, vice-president-operations, said the new building would house the company's executive offices, engineering division offices, sales and administrative offices and associated clerical personnel. When completed, over 300 shipyard employees will work in the building. The existing office building of the company located at the foot of Morton Avenue will be renovated for the operations and financial divisions.

Sun Ship's decision to proceed with the engineering of this building at the corner of 4th Street and Eddystone Avenue followed a three-year company study of the

capability of present yard facilities to accommodate the steady increase of engineering and technical personnel within the shipyard. Mr. Galloway pointed out that this growth is, to a large extent, the result of the increasing technical sophistication of the shipbuilding industry and the many other large projects being undertaken by the company in the aerospace and hydro-space industry.

Groundbreaking for the new building will take place sometime this spring with a scheduled occupancy date in early 1970. The new steel and glass structure will cost in excess of one-million dollars, and when completed, will add 70,000 square feet of working space to the shipyard. Landscaped grounds, a cafeteria and off-street parking for all the building's occupants have been included in the plans.

The architects and engineers for the new building are the Ballinger Company of Philadelphia.





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Lawrence Schacht Elected President Of Standard Dredging

The board of directors of Standard Dredging Corporation has elected Lawrence Schacht president of the company, it was announced recently. Mr. Schacht will continue to serve in his present capacity as board chairman and chief executive officer of the company.

Mr. Schacht replaces Ernest J. Balez Jr. who resigned as president

of the harbor and channel improvement concern.

Last May, Standard Dredging averted a proxy fight when it agreed with Mr. Schacht to replace six of the company's 12 directors. In August, Mr. Schacht, who heads the privately held Schacht Steel Construction Inc., Hillside, N.J., assumed the post of Standard Dredging chairman. A month later he was named chief executive officer. Mr. Balez had been both chairman and president.



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Bethlehem Appoints Brangan Assistant Mgr. For San Pedro Yard



John J. Brangan

Alfred J. Maloney, general manager of Bethlehem Steel Corporation's San Pedro (Calif.) yard, has announced the appointment of John J. Brangan as assistant manager.

Mr. Brangan has been general superintendent of Bethlehem's Hoboken, N.J., ship repair yard since early 1961. He succeeds Joseph D. Ingham who was named assistant manager of Bethlehem's Baltimore ship repair yards on January 1.

Mr. Brangan attended Pratt Institute in New York City, where he majored in mechanical engineering, and joined the Morse yard of United Dry Docks as an apprentice machinist late in 1933. This yard was acquired by Bethlehem in 1938 and renamed the Brooklyn 56th Street yard. It closed in the early 1960s. Mr. Brangan served in various capacities at both the Brooklyn 56th Street yard and the Hoboken yard until early 1957 when he was named manager of pierside repairs for the corporation's then New York area shipyards. He returned

to the Hoboken yard April 1, 1961, as general superintendent.

Bethlehem's San Pedro yard is one of the most modern and complete on the southern coast of California and recently completed a multi-million-dollar program of modernization and expansion. For many years a combination shipbuilding and repairing yard, this facility now specializes in ship repairs and has two floating drydocks, one of which has an overall length of 659 feet and can handle ships the size of jumboized T-2 tankers and C-4s.

New Steamship Line Serving Far East Started On West Coast

A new steamship firm, Cutlass Steamship Corporation, has been formed in Portland, Ore. The new company will provide service from the Malaysian countries of Sarawak, Brunei, and Sabah, to U.S. Pacific Coast ports. Northwest Maritime Corporation, Portland, will act as general agent for the steamship line.

The first ship in the new service will be the Gertrud Ten Doornkaat, which will arrive at Portland late this month with a cargo from Sibul, Sarawak, and at Los Angeles in early March. Other vessels will follow at monthly intervals.

Northwest Maritime Corporation is also an international and domestic freight traffic consultant firm, servicing over 70 shippers in the area. Offices are in the Senator Building, telephone 228-8585, and teletype is 910-464-6191. Cable address of Cutlass Steamship Corp. will be 'Cutlass Portland.'

Agents in California will be Interocean Steamship Corporation, and in Southeast Asia, The Sarawak Co. (1959) Sendirian Berhad, headquarters at Sibul, Sarawak.

Snelson Announces New Stainless Steel Fluorescent Fixtures

Snelson Oilfield Lighting Company, the originator of oilfield fluorescent fixtures, has announced another new model in its expanding line. Called the 6200SS model, it is accepted for listing under the label service of Underwriters Laboratories as 'Marine Type, Outside (salt water)'. This is the required listing to meet Coast Guard specifications for use on offshore drilling rigs and other marine applications.

Edgar Snelson, president of the Fort Worth-based firm, states that the 6200SS and the 5200SS features stainless-steel construction for the highest structural strength as well as resistance to corrosion or electrolysis. The unbreakable LEXAN plastic lens ensures no lens replacement problem. It has 40 times the impact resistance of plexiglass. This means there is no deterioration from an open fixture.

For complete facts and illustrated brochure, contact Snelson Oilfield Lighting Company, P.O. Box 1284, Fort Worth, Texas 76101.

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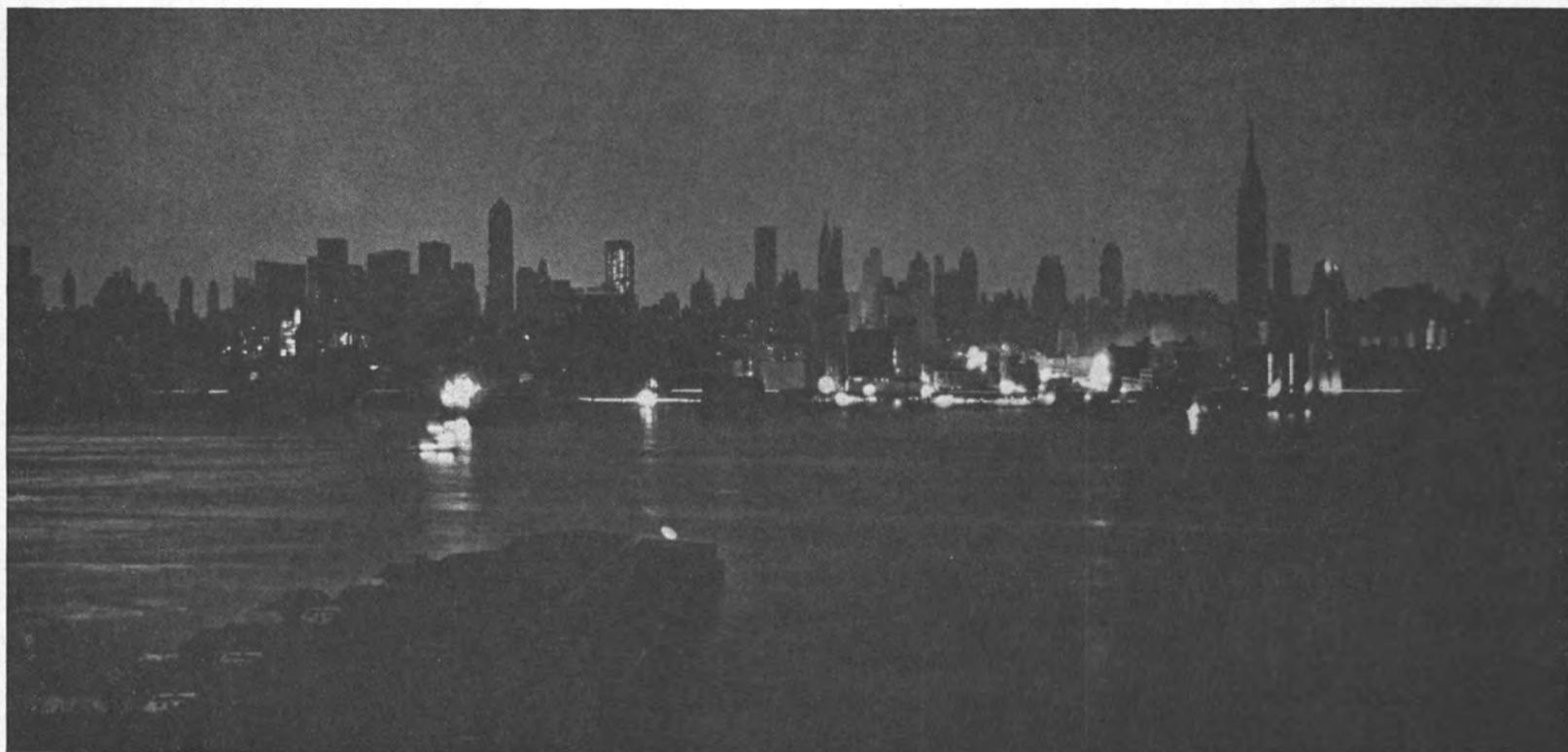
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Management Of Complex Overhauls Subject Of Hampton Roads Section Meeting



Attending Hampton Roads Section, SNAME, meeting were, left to right: **R. Broad**, and **J. G. Price**, past Section chairmen; Rear Adm. **J. A. Brown**, Section vice chairman; Comdr. **L. D. Ballou**, and Lt. Comdr. **W. Freakes**, authors; **G. Guy Via Jr.**, papers committee; **L. C. Robertson Jr.**, secretary-treasurer, and **Alvin E. Cox**, Section chairman.

The Fort Eustis Officers Club at Fort Eustis, Va., was the location of the recent meeting of the Hampton Roads Section of The Society of Naval Architects and Marine Engineers. A paper entitled "Managing Complex Ship Overhauls" was written and presented by Comdr. **L. D. Ballou** of Computer Aided Ship Design Group, NAVSEC, Washington, D.C., and Lt. Comdr. **W. Freakes**, planning officer, Office of the Supervisor of Shipbuilding, Conversion and Repair, USN, Newport News, Va.

The authors presented a paper covering a subject which receives little attention in the technical publications. The management of complex overhauls, and repairs can be included along with overhauls, is

of considerable significance because the planning for any one overhaul or repair would not suit the next nor be like the last. This is unlike new construction planning which falls into somewhat of a pattern from one ship to the next. The paper discusses various aspects of overhaul planning and makes recommendations for improving performance. An organizational arrangement is presented for conducting complex overhauls, including a suggestion to counter the adverse effects of specialization. The authors urged that statistical data be collected and analyzed in order that improvements can be made in the methods of planning and managing complex overhauls and repairs.

RV Prospector Of Deepsea Ventures Sails On Exploration In Search For Ocean Minerals



John E. Flipse, president of Deepsea Ventures, explaining the program of deepsea exploration for ocean-floor minerals scheduled for the research vessel Prospector. In attendance at the briefing, shown above, left to right, front row: **John M. Drewry**, chief counsel, Merchant Marine and Fisheries Committee; **T. N. Downing**, Virginia congressman; **E. A. Garmatz**, chairman, House Merchant Marine and Fisheries Committee, and **W. B. Spong**, Virginia senator. Second row: **R. Kaufman**, Deepsea Ventures vice-president; **Robert Lent**, Tenneco; **Martin T. Lee**, Tenneco vice-president; **William Symonds**, Tenneco vice-president, and **John Butz**, representing Senator **Warren Magnuson**.

The RV Prospector departed on January 13 for the first leg of its series of voyages to continue to explore and evaluate ocean-floor minerals. Prospector's departure came after an announcement was made in Washington, D.C. by Deepsea Ventures, of the multi-million-dollar commercial program leading to the mining of manganese, nickel, cobalt, copper and other constituents from superficial deposits in the deep ocean.

The 152-foot, 660-displacement-ton Prospector is the principal seagoing research arm of Deepsea Ventures, Inc., the Newport News oceanographic subsidiary of Tenneco Inc., Houston, Texas. The announcement was made on board the vessel at a Washington, D.C. Potomac River pier.

John E. Flipse, president of Deepsea Ventures, announced at the conference the voyage of the Prospector as part of a program that includes commercial mining operations in the early 1970s, based on the lead established by a carefully selected fund of information and the engineering development, discoveries, patents and personnel acquired from the six-year oceanographic research activity of its for-

mer parent, the Newport News Shipbuilding and Dry Dock Company, also a member of the Tenneco family. "Based on the exploration and engineering data bank that we have been compiling during the past six years, we believe we have the necessary information to carry out a major exploration voyage, with an excellent likelihood of discovering and proving large concentrations of high-assay nodules in favorable topographic environments in waters covering a sea floor which we identify as a logical extension of the United States land mass," Mr. Flipse said.

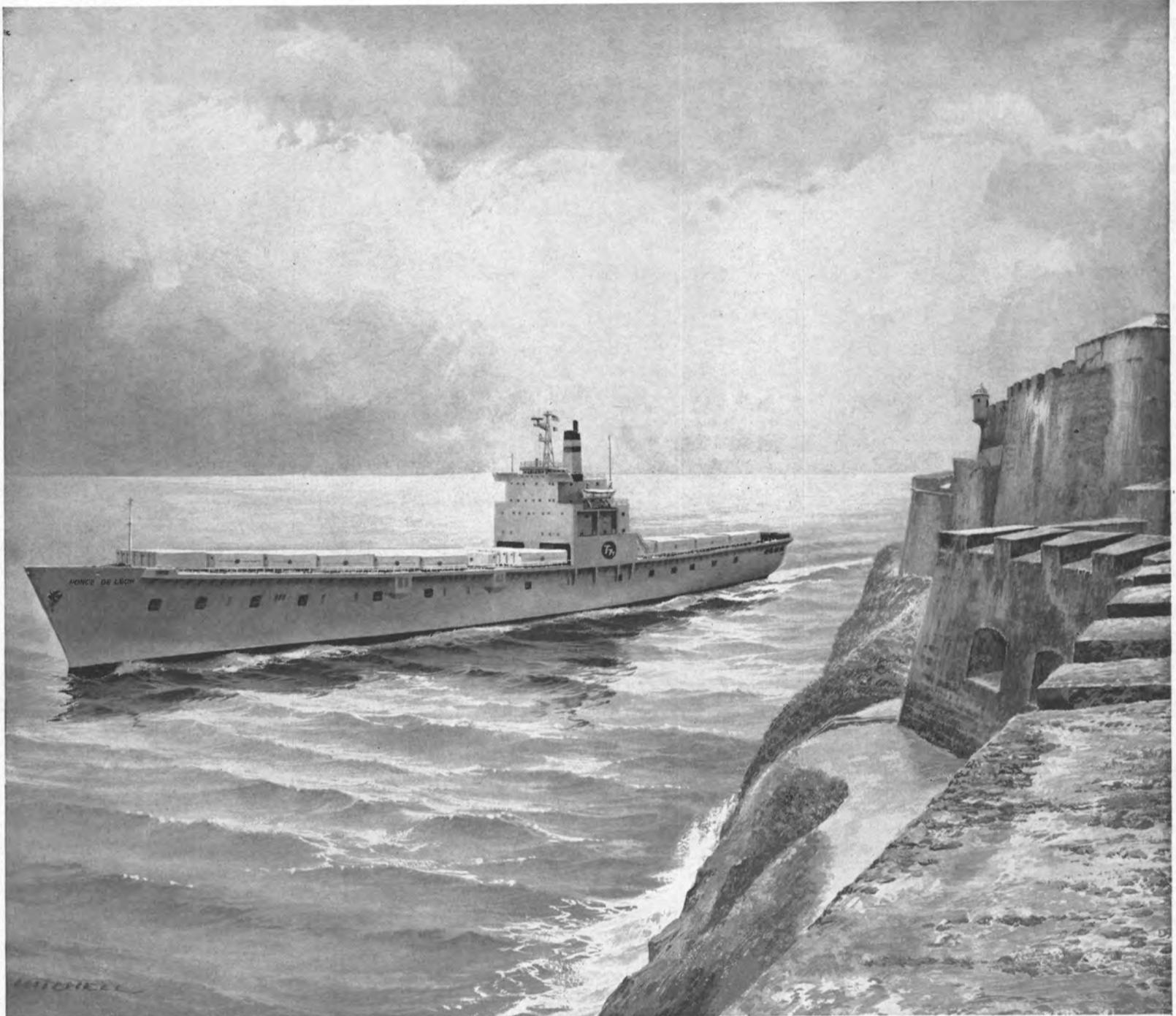


RV Prospector sets sail from Newport News, Va., on first leg of exploration voyage.



HENSCHEL EXPANDS—Newly opened in Amesbury, Mass., are expanded facilities for Henschel Corporation, makers of shipboard communications equipment. The new building provides more space for executive offices and a larger engineering staff, as well as additional shop area for new automatic machinery.

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Newport News Announces Management Appointments Of Bobelis And Terrell



George A. Bobelis



A. W. Terrell

George A. Bobelis has been named assistant to the general manager of the Newport News Shipbuilding and Dry Dock Company, Newport News, Va., a subsidiary of Tenneco Inc. D. A. Holden, chairman of the board of the Virginia shipyard, made the announcement.

At the same time it was announced by E. J. Tanner, vice-president finance and comptroller, that A. W. Terrell has been appointed manager of the General Accounting Department.

Mr. Bobelis was formerly works manager at the Electric Boat Division of General Dynamics Corp., Groton, Conn.

A native of Kaunas, Lithuania, Mr. Bobelis received an M.S. degree in mechanical engineering at the Technical University, Stuttgart, Germany, in 1949. He also received an M.S. degree in industrial management from the Massachusetts Institute of Technology in 1958.

Mr. Bobelis joined Electric Boat in 1958 and held a series of positions, including planning supervisor, pipe shop department; assistant to the operations manager; assistant superintendent welding, and superintendent of the piping department. In March 1965 he was named general superintendent installation, in charge of all machinery and outfitting departments. He was appointed works manager in August 1965.

He is a member of the M.I.T. Alumni Association, National Management Association, and The Society of Naval Architects and Marine Engineers.

Mr. Terrell joined Newport News' accounting division in 1937 as an office boy at the age of 16. Since then he has worked in numerous departments within the division—cost, machine accounting, internal auditing and special accounting. Prior to his present appointment, he was assistant manager of the general accounting department.

A graduate of the Walton School of Commerce in Chicago, Mr. Terrell received his degree in accounting in 1958.

He is a native of Newport News and served with the Army in Burma during World War II.

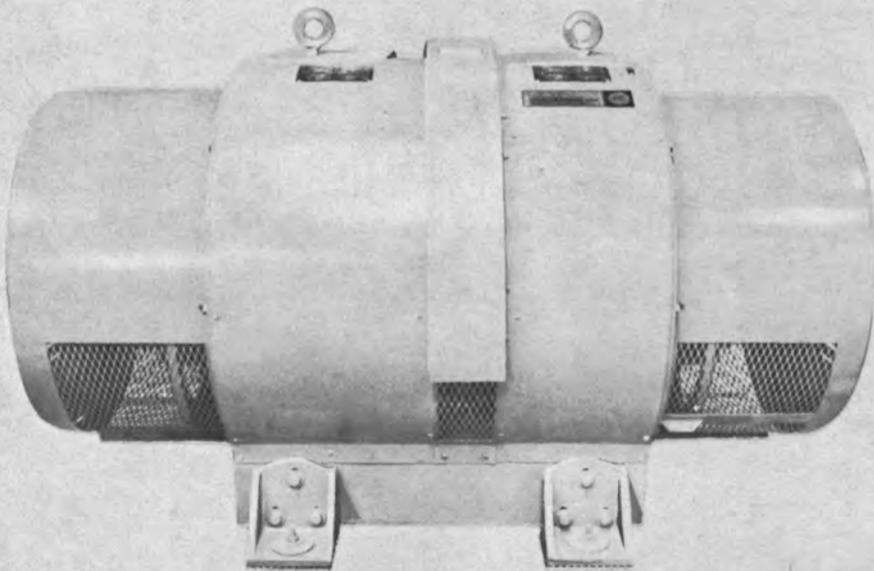
M. Rosenblatt And Son To Work On ASMS Program

M. Rosenblatt and Son, Inc., New York, has been awarded a \$125,000 contract by The Boeing Company for work on the current phase of the Navy's new Advanced Surface Missile System (ASMS) program.

Rosenblatt, which has an extensive background in naval design, will provide general naval architectural and marine engineering assistance, support and consultation for the integration of the defense missile system into a test ship.

Boeing is one of three firms which are heading industrial teams in the definition phase of the ASMS program. The three teams are competing for engineering development contracts on the Navy weapon system.

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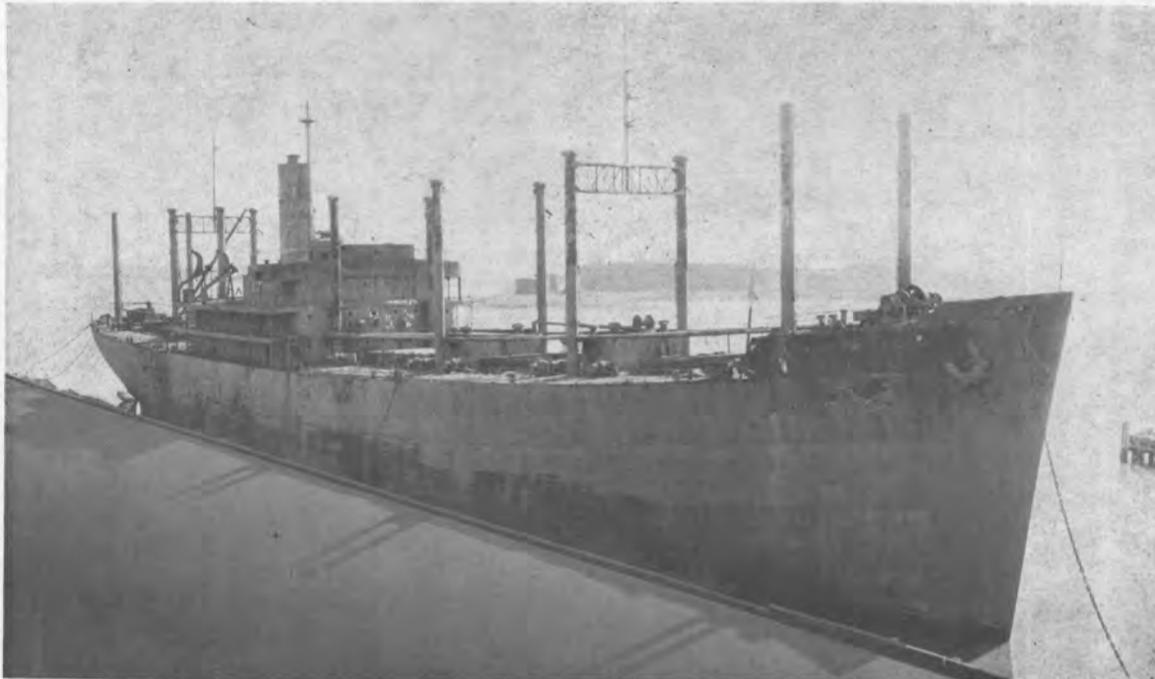
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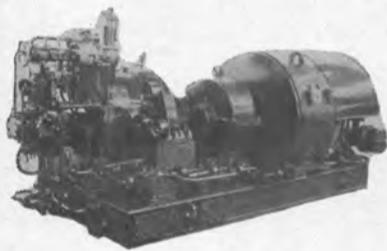
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INQUIRE ABOUT OTHER ITEMS YOU NEED**

MATERIAL FROM MOORE-BUILT C-2 MORMACWREN - HULL 271

Specification class C2-S-B1—Maritime Commission Hull #1184. **Main Turbine Rotors**: HP & LP—HP serial 75382—LP serial 75363. **ALSO, ALL MOTORS FOR FEED PUMPS, BILGE, CIRCULATORS, ETC.**

TURBO-GENERATORS



300 KW - From AP2 Ex-Medina Victory

TURBINE: Worthington-Moore—serial 7547 & 7548—440 lbs.—740°TT—28½" vacuum—type S4—5-stage—6097 RPM. **GEAR**: Type 14x7—6097/1200 RPM. **GENERATOR**: Crocker-Wheeler 102-HD—120/240 VDC—125 amps—40° rise—serial No. 973643 & 999795—compound wound. **Armature flange** 8¼" —B.C. 7"—12 holes. **NEW ARMATURE AVAILABLE FOR THIS GENERATOR.** SEE 3RD PAGE FOLLOWING.

300 KW - From AP3 Ex-Ridgefield Victory

TURBINE: Worthington-Moore type S4—5-stage—6097 RPM—740°TT—440#—serial No. 7108 & 7106. **GEAR**: 6097/1200—type 14x7—serial No. 7108—5.081:1 ratio. **GENERATOR**: Crocker-Wheeler 102-HD—300 KW—120/240 DC—6-pole—3-wire—stab. shunt—1200 RPM—type CCD—serial 973583. Suitable for units 7541 & 7543 and 7089 & 7188. **WILL SELL ARMATURE SEPARATELY**: 12-Hole flange—5/8" bolt holes—8.247" diam.—7" B.C.—flange & shaft 5".

300 KW Murray

TURBINE: G.E.—DORV—325M—440#—740°TT—5645 RPM. **GEAR**: S-192—5645/1200. **GENERATOR**: Ideal—120/240 VDC—1250 amps—stab. shunt.

300 KW GENERAL ELECTRIC

TURBINE: G.E.—DORV—325M—440#—740°TT—reduction gear S-192. **GENERATOR**: G.E. 120/240 VDC—1250 amps—stab. shunt.

TURN TO 3RD PAGE FOLLOWING FOR 300 KW SPARE ARMATURES

BOILER SOOT BLOWER ELEMENTS

12 Units—Diamond Power Specialty Corp.—type FM-1220—for blower units S-3, S-4—84¼" overall—2" tubes—22 jets—calorized metal.

11 Units—Diamond Power Specialty Corp.—used with type FM-1220 coupling—2" tubes—Dialoy element—S1&S2—26 jets—12'6" OA—2x2 steel coupling.

3 Units—2" ID tubes—15 jet—8'10½" OA—with 2" steel coupling—with FM-1220 unit blower.

ENTIRE LOT \$450.00

SHIPS SERVICE AIR COMPRESSOR

VEE-type—Sullivan—7x4½x4½—60 CFM—15 HP—230 volts—1850 RPM—light compound—with starter. **INGERSOLL-RAND ALSO IN STOCK**—model 15—type 40—5x4x4.

AP2 Victory Main Condenser Water Boxes

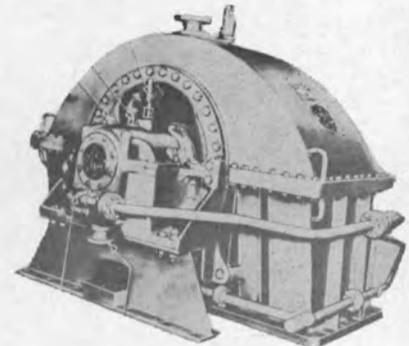
Mfg. by Graham—unused ABS and reconditioned ABS. Main condenser water boxes—AP3—Allis-Chalmers.

Aux. Condenser Water Box & Return Cover

Reconditioned ABS—Graham design—mfg. by Ross.

NEW AP2 VICTORY ENGINE

6600 HP Main Propulsion



G. E.
&
ALLIS-
CHALMERS
with
throttling
valve
assembly

COMPLETE TURBINE

GENERAL ELECTRIC

Low Pressure Turbine \$18,500
High Pressure Turbine \$19,500

NEW THROTTLE VALVE

Schutte and

NEW H. P. AND L. P. TURBINES

For General Electric and Allis-Chalmers

ABS RECONDITIONED 6600 HP

L. P. & H. P. MAIN PROPULSION

FROM EX-MEDINA VICTORY—MARACAIBO

H.P. Turbine—complete—Serial 4A-1618—

FROM EX-SHEEPSHEAD BAY VICTORY

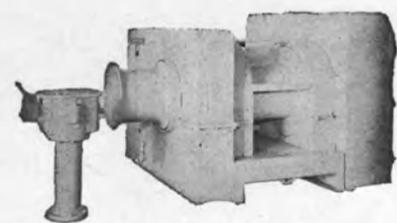
H.P. Turbine—complete—Serial 4A-2264—



AP2 VICTORY
WESTINGHOUSE
MAIN
REDUCTION
GEAR

Immediate
6000 SHP—R
ion 5410—L.P.
—AB No. PA
Ex-Medina Vic
1620.

VICTORY SHIP UNIT WINCHES



50 HP—230 V
house, G.E. or Cr
U-1, U-3 single
lbs. @ 223 FF
double speed—1
96 FPM. We ha
and left hand uni



THE BOSTON

313 E. BALTIMORE

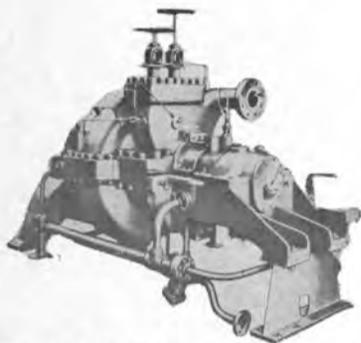
Main Office: LEXINGTON

New York Office: 11 Broad

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MACHINERY & EQUIPMENT

ENGINE ROOM EQUIPMENT on HP & LP Turbines



ENGINE ASSEMBLIES

ALLIS-CHALMERS
Low Pressure Turbine \$17,500
High Pressure Turbine \$18,500

VALVES - \$6750.00

Koerting

TURBINE BEARINGS

—labyrinth packing—diaphragms.

10 H.P. WESTINGHOUSE

PULSION TURBINES

D HULL 586—BUILDERS HULL 586

L.P. Turbine—complete—serial 4A-1619.

FACTORY—OFFICIAL NO. 81752

L.P. Turbine—complete—serial 4A-2265.

FACTORY
HOUSE
IN
TION

**NEW H.P. & L.P.
FLEXIBLE
COUPLING**

AR

Delivery

PM: H.P. pinion 3907
9157— from
factory serial 4A-

**NEW SPARE
BLADING FOR
WESTINGHOUSE
L. P. TURBINE**

**FOR AP2
FORCED DRAFT
BLOWERS—22-TD-18**

Westinghouse—230 PSI—430°
TT—back pressure 15 lbs.—
normal capacity 8900 CFM—
4.8" of water pressure. RPM
2875—9.6 HP—total steam
697—overload capacity—13,
700 CFM at 10.7.

WILL SELL FAN OR
TURBINE SEPARATELY

ON METALS CO.

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9-1900 • Marine Dept.: ELgin 5-5050

Way, New York, N.Y. 10004—(212) 943-2640

MISCELLANEOUS PUMPS & PUMP MOTORS



DE LAVAL VERTICAL ROTARY MAIN LUBE OIL PUMP

10/15 HP—230 VDC—
250 GPM @ 43 lbs.—
980/1750 RPM. MO-
TORS: G.E. or Reliance.



MAIN CIRCULATOR & MOTOR FOR AP2 VICTORY

Ingersoll-Rand 18VCM bronze pump—20"
suction—18" discharge—vertical. Flanges
opposite each other. Distance flange-to-
flange 4'5". Suction bolt circle 25"—dis-
charge bolt circle 22 3/4". Suction (20) 1/4"
holes—discharge (16) 1/4" holes. PUMP
WEIGHT: 5100 lbs. MOTOR: 5700 lbs.—
Allis-Chalmers 75 HP—230 VDC—500/
670 RPM—frame E-Bu-162—drawing No.
31099.

SPARE ARMATURE AVAILABLE FOR
ALLIS-CHALMER MOTOR — WILL SELL
PUMP MOTOR SEPARATELY.

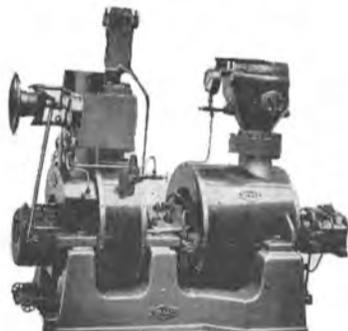


INGERSOLL-RAND 2VHM MAIN CON- DENSATE PUMP

120 GPM—85 PSI—Pump only

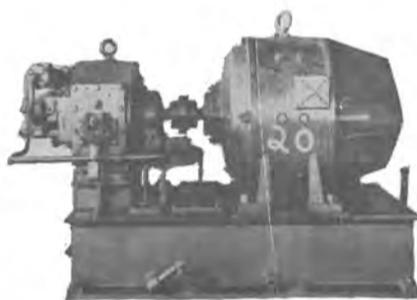
Motors for Above

15 HP Motors and Terry or
Coppus turbine drive.



WEIR TURBINE- DRIVEN FEED PUMPS TMFP7

PUMP: 7000 GPH—585 PSI—
1380 ft. head—5600 RPM. TUR-
BINE: 480 PSIG—750°TT—ex-
haust 5 PSIG.



AP3 Steering Gear Pumps

Northern Hydraulic (variable
stroke) and Hele-Shaw Hy-
draulic.

\$1750

Motors For Above Pumps

Reliance: 40 HP—230 VDC
—147 amps—type T—900
RPM.

\$1750

BUY COMPLETE UNITS OR PUMPS &
MOTORS SEPARATELY

AUX. COND. PUMPS

Ingersoll-Rand 1-VHM—with
5 HP 230 VDC motor.

Will Sell Pump separately.

LUBE OIL STANDBY

Vertical Duplex—Worthing-
ton—7 1/2 x 9 x 12.

FEED PUMPS

Worthington—vertical sim-
plex—11 x 7 x 24.

HORIZONTAL DUPLEX PUMPS

Size 6x6x6 pumps.

AUX. CIRCULATOR MOTORS: 25 HP—230 VDC—96 amps—658/875 RPM—G.E. and Reliance

AP3 LARGE VICTORY MATERIAL

PROPELLER: DORAN—Seattle—4-blade—20'6" diam.—6' pitch—heel #4931—ABS (59) 645R.
ALSO TAILSHAFT—RUDDER—RUDDER CARRIER—UPPER STOCK

FORCED DRAFT FANS & TURBINES: Westinghouse type 25-TD-18—231.6 lbs. steam—exhaust 15.6 lbs.—superheat 31°F—
max. capacity 19,000 CFM—static pressure 10.7—3950 RPM—45.8—serial nos. 5A2167-11 & 5A2167-12.

SPECIAL FROM RIDGEFIELD VICTORY

**G.E. HP & LP TURBINES & REDUCTION GEAR—8500 HP—9350 HP Oregon Ship-
building Hull #1224—Instruction Book 16263**

TURBINES: G.E.: L.P.—8-stage—3509 RPM—#62043 H.P.—8-stage—6159 RPM—#62042 REDUCTION GEAR:
#75143—type MD-48-A—8500 HP—9350 max.—6159/3509/763/85 RPM. Maneuvering valve, operating cylinder,
etc.

PACIFIC FEED PUMPS — TYPE JB

Horizontally split—diffuser type centrifugal. CAPACITY: 150 GPM @ 542# or 1242' normal—185 GPM @ 600# or 1418'
max. Steam inlet 440 @ 507°TT—RPM 3740—water rate 35 lbs/HP—pumping temp. 240°. Total weight 1 unit 3100 lbs. OAL
turbine & pump on base 8' 9 3/8"—OAW about 2'.



CROCKER-WHEELER

New—as pictured above—with ABS certificate. From VC2-S-AP2 Ex-Medina Victory. For Crocker-Wheeler generator 102-HD-DP—type CCD—compound—serial 973-643; 999-795 and others in this group. Bearing shaft size commutator end—3 1/2"; Flange size 8 1/4" OD; Bolt Circle 7", with 12 holes 1/2" diameter.

A 300 KW VICTORY SHIP & C-2 GENERATOR ARMATURES

ALLIS-CHALMERS

120/240 volts DC—type MCW 21-11—1200 RPM—stab. shunt—148171 & 148173—from ex Stamford Victory—completely re-wound onuary 10, 1968—ABS—(1).

WESTINGHOUSE

120/240 volts DC—1250 amps—1200 RPM—stab. shunt—frame CB 208.4—Instruction Book 8301—51-S-20P-923 and 18-83H-313.

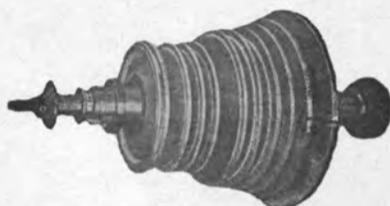
GENERAL ELECTRIC

120/240 volts DC—1250 amps—1200 RPM—stab. shunt—serial No. 2222725-2222807—In G.E. Instruction Book G.E.I. 16584.

C-2 ARMATURES

North Carolina C2-S-AJ-1—General Electric—120/240 volts DC—type MPC—stab. shunt.

T2-SEA-1 TANKER MAIN STEAM & AUXILIARY EQUIPMENT



B MAIN TURBINE ROTORS

Large Turbine Rotors—Lynn
Large Turbine Rotors—Schenectady
Elliott Turbine Rotors—Fit G.E. small Schenectady turbine



C G.E. MAIN PROPULSION GENERATOR REVOLVING FIELD

G.E. reconditioned—June 1967



D G.E. MAIN GENERATOR STATORS



E REWOUND WESTINGHOUSE MAIN PROPULSION GENERATOR REVOLVING FIELD

Was rewound for Gulf when removed from "Gulf Moon". Since that time, it has been re-checked in the Westinghouse Service Shop and balanced. ABS and ready to go. —December 18, 1968—certificate number 68-BA4831 — A-67B-JW — 12/18/68 Baltimore.

WRITE FOR COMPLETE INFORMATION



F WESTINGHOUSE MAIN GENERATOR STATOR WITH OR WITHOUT COOLER

G WESTINGHOUSE MAIN MOTOR FIELD COILS COMPLETE SET

Westinghouse — universal type — newest design—80 pieces—one set.

H T2 RUDDER

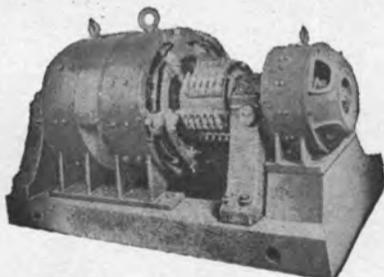
Reconditioned—ready to go.

T2 TAILSHAFTS

Reconditioned

PROPELLERS

T2 propellers



I WESTINGHOUSE EXCITER SETS

110 KW—28 KW—5 KW available
110 KW—32.5 KW—5 KW available

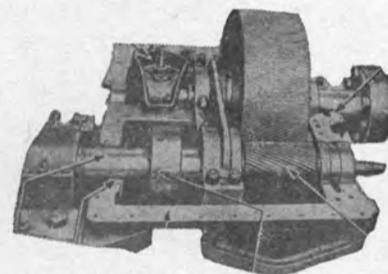
J LORIMER

Emergency Generator Engine and Generator Parts



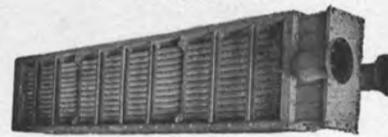
K MAIN CIRCULATING PUMP MOTOR

125 HP—Westinghouse—Frame 876C—type CS—squirrel cage—440/3/60—585 RPM. Reconditioned to ABS. Ready to go immediately.

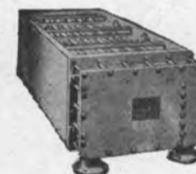


L G.E. AUX. TURBO-GEN. REDUCTION GEARS Bull gear & pinion. With ABS.

M WESTINGHOUSE AUXILIARY GENERATOR REDUCTION GEARS AND BEARINGS COOLERS



N MAIN MOTOR AIR COOLER Westinghouse—ABS—ready to ship



O MAIN GENERATOR AIR COOLER

Westinghouse — reconditioned with ABS—ready to ship

P G.E. MAIN GENERATOR COOLER type G4—bronze heads—AL brass tubes



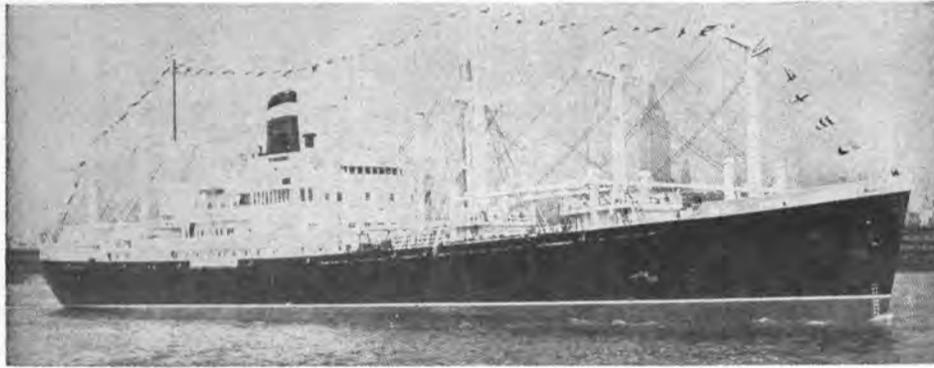
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ALL MACHINERY FROM U.S.M.C. NORTH CAROLINA C2-S-AJ1



INCLUDING MASTS,
BOOMS, KINGPOSTS,
AND RIGGING
Send us your inquiries

CENTRIFUGAL PUMPS

— ALLIS-CHALMERS —

MAIN CIRC. PUMP

9500 GPM @ 27'—800/600 RPM—type S.B. 20x20—horizontal. MOTOR: Allis-Chalmers 100 HP—230 volts—600 RPM—Frame EB-162.

TURBINE DRIVEN MAIN FEED PUMP

Allis-Chalmers type BK-4—150 GPM @ 1465' head—180 GPM @ 1342' head. TURBINE DRIVE: Type ZS-1—94 HP normal—440 PSI—740°TT—4400 RPM.

AUXILIARY CIRCULATOR

Allis-Chalmers 8x6—SE—1500 GPM—27' head—1200/1600—15 HP motor—horizontal.

MAIN CONDENSATE

6x3 CF2V—Allis-Chalmers—vertical—120 GPM—185' head—1310/1750 RPM—15 HP.

AUXILIARY CONDENSATE

3x1½ SSL—20 GPM—185' head—1310/1750 RPM—7½ HP—vertical.

FIRE PUMP

4x3 B-2—Allis-Chalmers—400 GPM—280' head—1425/1900 RPM—50 H.P.

CIRCULATING PUMPS

Hot water & auxiliary sea water circulating pumps—1½x1½ SSH—20 GPM—10' head—1750 RPM—½ HP—and 80 GPM—70' head—2620/3500 RPM—3 HP.

— WORTHINGTON —



MAIN FEED PUMP

2 UQS-2—150 GPM @ 1465 T.D.H.—4000 RPM—115 HP. Turbine. Form S2RM—Moore steam turbine—1½" steam inlet—440 lbs WP—750°F @ 10 lbs gauge. Water rate 26.8 lbs BHP/HR.

MAIN CIRCULATOR

20-LAL-18—20" suction—20" discharge—horizontal—9500 GPM—27' TDH—800 RPM—100 HP. MOTOR: 100 HP—360 amps—800/600 RPM—horizontal—Frame 183 SK—light compound.

6-L-1 AUXILIARY CIRCULATING

1500 GPM—27' head—1450 RPM—horizontal—8" suction—6" discharge—15 HP—230 DC—56 amps—1450/1090—frame 83SK.

2½UZS-1 MAIN CONDENSATE

Vertical—6" suction—3" discharge—120 GPM—185' T.D.H.—1750 RPM—15 HP—230 VDC—56 amps—1750/1310—ambient 50°C—frame 83SK.

3-UB1—FIRE SERVICE

Horizontal—4x3—400 GPM—281' head—1750—50 HP Motor—230 VDC—178 amps—1310/1750 RPM—frame 133SK.

AUX. SALT & HOT WATER CIRCULATING

1½ D—20 GPM—10' TDH—1750 RPM—3 HP salt water circ.—1 HP hot water circ.

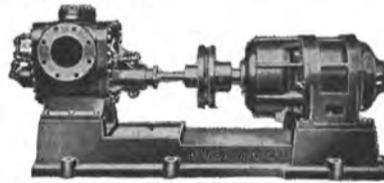
RECIPROCATING STEAM PUMPS

— WORTHINGTON —

- Port Feed—8½x5¼x15—50 GPM—600 lbs.—VS
- Fire Service & Standby—12x11x18—400 GPM—125 PSI—VS
- Dirty Ballast—Clean Bilge 10x11x18—400 GPM—50 PSI—VS
- Fuel Oil Standby—7x4x10—11 GPM—400 lbs.—VS
- Lube Oil Standby—7½x9x12—250 GPM—47' head—VD
- Make-up Evaporator Feed—3x2 3/4x3—20 GPM—50 lbs.—HD
- Contaminated Evaporator Feed—20 GPM—75 lbs.—HD
- Salt Water Evaporator Feed—3x2 3/4x3—20 GPM—35 lbs.—HD

— POWER RECIPROCATORS —

- Drinking water—2½x2—10 GPM—70 lbs—¾ HP—230 volts DC
- Sanitary—2½x2—30 GPM—80 lbs—2 HP—230 volts DC



KINNEY MOLASSES PUMP

430/215 GPM—size 8x8—pressure 60 lbs.—142/280 RPM—Motor RPM 875/1750—Reducer Falk 6.25:1. GE Motor—30/15 HP.

STEERING GEAR

McKiernan-Terry—size 10½ RAM Electro-Hydraulic. MOTOR: 40 HP. Westinghouse—frame 143S—690 RPM—230 volts.

— REFRIGERATION EQUIPMENT —

• CARGO REFRIGERATION PLANT

Compressor 7G8-EF—size 240—897 cu. inches—minimum displacement 39.2 tons—Carrier. Has 365 sq. ft. 3-pass Freon 12 condenser. MOTOR: 35 HP—230 VDC—1310/1750 Westinghouse—type 113-SK.

• SHIP SERVICE REFRIGERATOR

York 4x4—type Y-38—model 44-Fe—50 sq. ft. condenser. MOTOR: 10 HP—230 VDC—type SK—frame 43—1750 RPM—37.3 amps.

• COLD DIFFUSER

York type 4—Fan-Fin unit 1155 CFM—82 sq. ft. York type 2—543 CFM—36.8 sq. ft.

• CARGO WINCHES

North Carolina built type 73-S—mfg. by AH&D—50 HP—230 volts DC.

• BAILEY BOARD COMPONENTS



THE

BOSTON METALS CO.

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Main Office: LExington 9-1900 • Marine Dept.: ELgin 5-5050

New York Office: 11 Broadway, New York, N.Y. 10004—(212) 943-2640

G.E. 300 KW TURBO GENERATORS

GENERATOR: Type DORV-325M—5645 R.P.M.—440 Lbs.—740° TT—18" exhaust. GEAR: Type S-192—right hand—5645/1200—G.E. GENERATOR: G.E. 300 KW—120/240—1200 RPM—type MPC—stab. shunt. WILL SELL ROTORS—GEARS—ARMATURES SEPARATELY.

SPRAY DEAERATING HEATER

54000 lbs. water/hour. Elliott Co.

FEED WATER HEATERS

- FIRST STAGE—Shell & tube—45000 lbs/hr—100°—172°F—305 sq. ft.—Heat Transfer Products.
- THIRD STAGE—5400 lbs/hr—240° to 318°—200 sq. ft. effective surface. Heat Transfer Products Co.

EVAPORATORS

Contaminated water—36-14 Paracoil-Davis Eng.—Distiller 2F72D Davis.

EMERGENCY DIESEL GENERATOR SET

Heavy duty—75KW—120/240 DC—720 RPM Ideal. ENGINE: Lorimer 115 HP—7½x9½—720 RPM—4-cycle—radiator cooled. With all switchgear. OAL 12'4"—OAW 49"—OAH 79"—Weight 10,500 lbs.

M.G. SET

D.C. final AC—Bus—MG set—5.5 HP—230 Volt 1800 RPM input—Diehl's—3 KW 120/1/60 output.

AIR EJECTORS

Ingersoll-Rand main air ejector and auxiliary air ejector.

AIR COMPRESSOR

Ship service—type PB-2—7x4x4—Chicago Pneumatic—15 HP—230 volts—1750 RPM.

COMBUSTION CONTROL

Worthington—4¼x2½x2¼—2-stage—17.9 CFM at 100 lbs.—5 HP—230 volts DC.

FORCED DRAFT BLOWER

Type 6-SL—12000 CFM—8.1 S.P.—1830 RPM—Buffalo Forge. MOTOR: Allis-Chalmers type EB-100—20 HP—1190/1830 RPM—230 volts—75 amps.

FUEL OIL BURNER

Todd HexPress—3 per boiler.

FUEL OIL HEATERS

ALCO—4400# fuel oil—from 100° to 230°—shell & tube type—unit in four sections.

FUEL OIL METER

2"—DVHP—30 GPM—Buffalo.

SEPARATOR

Oil and water—50-ton—McNab Victor.

DeLAVAL OIL PURIFIERS

Unimatic model designation 55-N-13—for turbine or light oils—200 GPH. Powered by 2 HP 230 volt DC Allis-Chalmers motor—frame 224.

Kaiser To Enter Steamship Business

Kaiser Aluminum & Chemical Corporation and Kaiser Steel Corporation have announced plans to enter the ocean-transportation business on an international basis.

The announcement was made jointly by Jack L. Ashby, president of Kaiser Steel, and Thomas J. Ready Jr., president of Kaiser Aluminum.

A new jointly owned company, United International Shipping Corporation, has been formed by the two corporations and will, when in full operation, provide management services for the shipping of various types of bulk products.

A spokesman for the new venture, headquar-

tered at Kaiser Center, Oakland, Calif., said that plans for vessel construction and trade routes are now being formulated.

K. R. Peck, formerly general sales manager of Kaiser Steel's Fabricating Division, has been named president of the new corporation. S. C. Knight, who was general traffic manager of Kaiser Steel, was named executive vice-president.

Edgar F. Kaiser, chairman of the board of Kaiser Industries, will also serve as chairman of United International Shipping Corporation.

E. E. Trefethen Jr., president of Kaiser Industries, will be vice-chairman of the board of the new company. Other directors are Mr. Ashby, Mr. Ready, William Marks, vice-president of Kaiser Industries, Mr. Peck, and Mr. Knight.

Detroit Diesel Announces Series Of Seven Promotions



Eric Sutton



Donavon F. Downham



John C. Campbell



Harry F. Wooster

Lauren H. Wells, general sales manager of Detroit Diesel Engine Division, General Motors Corporation, has announced a series of seven promotions within the division's sales organization.

Eric Sutton has been promoted to the position of general service manager. Born and educated in England, Mr. Sutton joined Detroit Diesel in 1949 and has held several managerial positions in the field and home office prior to his present appointment.

Donavon F. Downham succeeds Mr. Sutton as manager, eastern regions. In his new position Mr. Downham will be responsible for all sales, parts and service activities in the division's three eastern sales regions.

John C. Campbell, formerly distributor sales manager, has been named automotive sales manager. In his new position he will be responsible for the division's sales to the truck and bus industry, a market which is continually growing in importance.

Harry F. Wooster succeeds Mr. Campbell as distributor sales manager. Formerly Chicago regional manager, Mr. Wooster's move to the home office will include the responsibility for coordinating all phases of distributor development.

The transfer of both Mr. Downham and Mr. Wooster to the home office created several regional vacancies. William C. Campbell will move from Atlanta regional manager to Detroit regional manager succeeding Mr. Downham. James R. Weller has been appointed as the new Atlanta regional manager and Raymond A. Reynolds succeeds Mr. Wooster as Chicago regional manager.

T.J. Stevenson Names Freitas Vice-President

Edward R. Freitas, who has served in American- and foreign-flag shipping activities for some 26 years, has been appointed a vice-president of T. J. Stevenson & Co. Inc., New York. The announcement was made by T. J. Stevenson, president of the firm.

The company serves as general agent for Dominican Line, Netumar Line and West Coast Line.

Prior to joining the Stevenson organization, Mr. Freitas was associated with Delta Line, Brodin Line and I.F.C. Lines.



SIGNS of the FINEST SERVICE

Before the advent of radio, flags flown from the windows of the Gillen offices signaled the company's tugs in the harbor. White meant continue as originally ordered . . . green meant telephone from the next destination . . . red was the signal to return immediately to the company pier.

Today, the entire Gillen fleet consists of the finest and most modern equipment. Communications are instant. So is Gillen's response to *your* needs with the finest and most efficient lighterage and towing service available.



LIGHTERAGE
AND TOWING
SINCE 1865

140 CEDAR STREET, NEW YORK, N.Y. 10006 • 212-964-8787

New American Institute Of Merchant Shipping Elects Officers And Board Members



Ralph E. Casey



Albert E. May

The board of directors of the newly created American Institute of Merchant Shipping, known as AIMS, has announced the election of the following officers:

Ralph E. Casey, former president of the American Merchant Marine Institute (AMMI), executive vice-president; **Albert E. May**, former assistant executive director, Committee of American Steamship Lines (CASL), vice-president; **Ralph B. Dewey**, former president of the Pacific American Steamship Association (PASSA), regional vice-president, with headquarters in San Francisco; **Parker S. Wise**, former secretary-treasurer of AMMI, will serve in that capacity with the new organization.

AIMS' member companies own a total of over 500 U.S.-flag merchant ships representing over half of the privately owned vessels in the 905-ship active merchant marine. The AIMS ships include the overwhelming majority of the American-flag vessels constructed since World War II and all of the modern U.S. cargo liners built in recent years under the 1936 Merchant Marine Act's replacement program.

AIMS' company ships aggregate 7.2-million deadweight tons and the membership is comprised of tanker firms with vessels in international and domestic trades, lines operating ships under subsidy-differential contracts and non-subsidized companies with dry cargo ships in the foreign and coastal trades.

In outlining the goals for AIMS, Mr. Casey said: "AIMS was created in an effort to eliminate the differences among management segments with respect to maritime issues. It has been recognized for some time that the diffusion of industry groups has seriously impaired the effectiveness of its voice before Congress and the executive branch of the government.

"While, admittedly, AIMS does not even now represent the ultimate in solidifying all maritime management, we are hopeful that in time our membership will grow to effect an all-inclusive national shipowners' association. That has been accomplished in most maritime countries of the world, and there is no logical reason why it cannot be accomplished here. To that end, it is the ordained purpose of AIMS to recognize and reconcile the special interests of all segments of the American merchant marine. The overriding objective is the establishment and maintenance of a strong, well-balanced American-flag fleet, adequate to the needs of this nation for both commerce and defense."

Mr. Casey said AIMS has pledged to work closely with all segments of the industry, both labor and management, as well as government, to revitalize the American-flag fleet. "The long-range outlook is good," he said. "AIMS looks to the new administration for a bold new program to revitalize the American merchant marine. President Nixon has promised to do this. We in AIMS agree with the President that the time has come for 'new departures, new solutions and new vitality' in American shipping."

Mr. Casey said his new position presented "a great challenge;" that the joining of companies representing different fleet segments in a common effort to pull the industry out of a "national quagmire of indifference" is the only solution in regaining lost maritime prestige.

AIMS hopes to move into new offices in Washington in the near future, Mr. Casey added.

The initial members of AIMS include, basically, companies which formerly comprised AMMI, CASL, and PASSA. Additional steamship lines have either joined AIMS or expressed an interest in becoming members. AIMS' temporary headquarters are located in the former AMMI offices at 919 18th Street, N.W., in Washington.

The 15 board members are: **W. C. Brodhead**, vice-president-transportation, Marine Division, Gulf Oil Corporation, New York; **Everett S. Checket**, general manager, Marine Transportation Department, Mobil Oil Corporation, New

York; **Lawrence C. Ford**, president, Chevron Shipping Company, San Francisco; **Worth B. Fowler**, president, American President Lines Ltd., San Francisco; **T. J. Fuson**, general manager, Marine Department, Humble Oil and Refining Company, Houston; **Charles Kurz**, president, Keystone Shipping Company, Philadelphia; **John J. McMullen**, president, United States Lines, Inc., New York; **John I. Mingay**, vice-president and general manager, Marine Department, Texaco Inc., New York; **William T. Moore Sr.**, president, Moore-McCormack Lines, New York; **Frank A. Nemec**, president, Lykes Bros. Steamship Co., Inc., New Orleans; **Leo C. Ross**, president, Pacific Far East Line, Inc., San Francisco; **Norman Scott**, executive vice-president, Matson Navigation Company, San Francisco; **Fred S. Sherman**, president, Calmar Steamship Corporation, New York; **Spyros S. Skouras**, president, Prudential Lines, Inc., New York; and **H. Lee White**, president, Marine Navigation Company, New York.



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De Laval Turbine Makes Two Executive Appointments As Marine Department Expands



William I. H. Budd



E. L. Fay Jr.

New executive positions for **William I. H. Budd** and **E. L. Fay Jr.**, in the marine department of De Laval Turbine Inc., Trenton, N.J., have been announced by **B. B. Cook Jr.**, vice-president of marketing. Mr. Cook said the advancements broaden the department's organization to better serve an increasing volume of marine business.

Mr. Budd moves to the corporate staff in the new position of manager of federal and marine marketing. He joined De Laval in 1964 after 28 years with the shipbuilding division of Bethlehem Steel Corporation. His positions there included project manager for the nuclear propulsion installation of the USS Long Beach, and head of main propulsion machinery design. Mr. Budd is a graduate of the Massachusetts Institute of Technology, and a member of The Society of Naval Architects and Marine Engineers and of the American Society of Naval Engineers.

Mr. Fay, who has been promoted to manager of the marine department, joined De Laval in 1961 and has held several major positions in the department. Prior to joining De Laval he was head of the machinery noise branch of the U.S. Navy Engineering Experiment Station at Annapolis. Mr. Fay is a 1951 graduate of the U.S. Merchant Marine Academy. His sea duty includes service as engineering officer on the first of the MSO class of minesweepers.

Reporting to Mr. Fay will be **F. D. Madea**, who has been named to succeed Mr. Budd as manager of marine engineering, and **A. D. Sutton**, who has been promoted to manager of marine contracts.

Mr. Cook said that De Laval anticipates a substantial growth in demand for its DLT-M line of standardized marine propulsion equipment. The new line, in development for several years, was revealed in 1968 with the announcement of a contract to design and build 32,000-shp systems of the new design for 11 LASH cargo vessels, the largest merchant marine propulsion equipment order in recent years.

Mr. Cook said the DLT-M line now includes configurations and frame sizes for 18,000 to 42,000 hp, especially designed to occupy minimum space, particularly conforming to low overhead requirements; and designed for ease of installation and for maximum compatibility with remote control automated engine room concepts.

Southern Ship Building Twin-Screw Tug

Southern Shipbuilding Corp., of Slidell, La., has received a contract from Gulf Atlantic Towing Corp., of Jacksonville, Fla., for the construction of a twin-screw tugboat. Designated Hull No. 83, the vessel has dimensions of 105 feet 9 inches by 32 feet by 19 feet 8 inches, and it will be powered by 3,000-total-bhp diesels.

W.F. Akin And F.T. Stegbauer Elected AWO Vice-Presidents

W. F. Akin, vice-president of Nashville Bridge Company, Nashville, Tenn., and **Frank T. Stegbauer**, vice-president of Southern Towing Company, Memphis, Tenn., were elected vice-presidents of The American Waterways Operators, Inc., at the annual meetings of members in Regions 1 and 2 of the Association. Directors of the Association were also elected by members in the regions, who met in St. Louis and in Pittsburgh.

In Region 1, which encompasses the areas of the Mississippi, Missouri and Illinois Rivers, the following directors were named to two-year terms on the board: **E. E. Ahlemeyer**, vice-president of National Marine Service Incorporated, Hartford, Ill., representing other members; **F. A. Mechling**, executive vice-president of A. L. Mechling Barge Lines Inc., Joliet, Ill., re-elected to represent regulated carriers; **Earl C. Rose Jr.**, chairman, Rose Barge Line, Inc., Clayton, Mo., representing other carriers for hire; **William S. Streckfus**, vice-president of Streckfus Steamers, Inc., St. Louis, Mo., re-elected to represent regulated carriers, and **Howard A. Watters**, vice-president-transportation of Central Soya Company, Inc., Fort Wayne, Ind., representing private carriers. Mr. Stegbauer, who was elected vice-president in Region 1, serves on the board of directors representing other carriers for hire. He succeeds **D. R. Brandborg**, vice-president of Cargo Carriers, Incorporated, Minneapolis, as vice-president in the region.

In Region 2, which encompasses the Ohio River and tributaries, directors elected at the meeting in Pittsburgh are: **Gresham Hougland**, executive vice-president of the Crouse Corporation, Paducah, Ky., re-elected to represent other carriers for hire; **Jerry L. Page**, vice-president of Southern Barge Line Corporation, Paducah, Ky., re-elected to represent regulated carriers, and **John W. Weaver**, vice-president of supply and distribution, Standard Oil Company (Ky.), Louisville, representing private carriers. Mr. Akin, who was elected vice-president in Region 2, is serving on the board representing other members. He succeeds Mr. Page as vice-president.

Following each of the meetings of members in St. Louis and Pittsburgh, conferences with the Army Corps of Engineers and U.S. Coast Guard were held to discuss navigation matters. Numerous guests were in attendance at both sessions.

U.S. Lines Requests Bids For Conversion Of Eight Mariners To Containerships

The United States Lines has requested shipyard bids for the conversion of eight Mariner-class ships into full containerships. The bids are to be submitted by February 24.

The announcement of the invitation to bid was made by the Maritime Administration. The Administration noted that U.S. Lines had filed an application for construction subsidy but at the time the bids were requested, this application had not been acted upon by the subsidy board.

The cost of converting the eight ships has been estimated at \$52-million.

American Marine To Build Twin-Screw Cementing Boat

The Halliburton Co. of New Orleans, La., has ordered a twin-screw cementing boat from American Marine Corp., New Orleans, La. The boat is to be 130 feet 7 inches in length, with a beam of 33 feet and a depth of 7 feet. It will be equipped with 740-total-bhp diesels.

Todd Agrees To Sell Its Products Division

Todd Shipyards Corporation has announced that it had agreed in principle to sell its Products Division and its investment in related subsidiary companies in England and Canada, to Combustion Equipment Associates of New York. It is estimated that the sale price will exceed \$2-million in cash.

J. T. Gilbride, Todd president, stated that the Products Division manufactures and markets gas and oil burning combustion equipment, which products are not compatible with Todd's long-range diversification program. He explained that it is Todd's desire to expand into products more closely associated with the Lester Engineering Company, a Todd subsidiary. Lester markets die-casting and injection molding equipment at its Cleveland, Ohio plant.

Combustion Equipment Associates is a leading company in the research, design, manufacturing and marketing of air-pollution-control equipment and consequently the Todd Products line would augment CEA's present operations.

Trans-Ocean Elects Fanelle Vice-President

Trans-Ocean Steamship Agency, Inc., 21 West Street, New York, N.Y., at a meeting of the company's board of directors, elected **William J. Fanelle Jr.**, as a vice-president in charge of the ship chartering department.

The board also named **Theofilos A. Vatis** as an assistant vice-president.

Wyatt Launches Loveland 26—Heavy-Duty Ocean Barge



Loveland 26, pictured above, was recently launched and delivered to the owners, S.C. Loveland Co., Inc.

Wyatt Division, U.S. Industries, Inc., Port Houston Shipyard, recently launched and delivered the Loveland 26 to the owners, S. C. Loveland Co., Inc.

Designed by J. Henry Co., Inc., Philadelphia, Pa., this ocean service, heavy-duty deck barge measures 180 feet in length by 43 feet 6 inches in beam by 12 feet 9 inches in depth and is believed capable of withstanding the highest concentrated deck loading of any barge of its type now in service.

The barge is longitudinally framed with two bulkheads and six transverse bulkheads, dividing the barge into 21 watertight compartments, and transverse flooding ducts connecting the wing tanks will prevent asymmetrical flooding in the event of hull damage.

The system of heavy deck longitudinals and transverse web frames will fulfill all present and anticipated needs for transporting extremely heavy units, and will easily permit loading of tractor-trailer trucks side by side.

Mrs. John McDonald, wife of the S. C. Loveland Company representative, christened the barge during ceremonies attended by the owners and Wyatt officials.

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Mobil Sales & Supply Appoints Peter Sawada



Peter Sawada

Peter Sawada has been appointed area sales representative for the Far East in the marine trade department of Mobil Sales and Supply Corporation, according to J. E. Johannessen, general sales manager of the department.

Mr. Sawada will assist Glan Moseley, marine sales manager for Asia, Australia, New Zealand and South Africa. He transferred from Japan to New York in January.

Mr. Sawada graduated from Kyoto University, Japan, in 1949 with a degree in political science and also spent one year at Kenyon College, Kenyon, Ohio, studying economics.

He joined Mobil in 1961 as assistant manager of Mobil Sales (In-

ternational) Ltd., Tokyo. Previously he handled dry cargo sales for the NYK Line and represented the line at various freight conferences on shipments to North and South America.

Passenger And Freight Subsidiaries Formed By Holland-America

Two subsidiaries have been formed within the organization of Holland-America Line, it has been announced. They are Holland-America Line Passenger Corporation and Holland-America Line Freight Corporation. They will be responsible for the operation of the passenger vessels and the freight services, respectively.

Named as managing directors of Holland-America Line Passenger Corporation are N. van der Vorm, member of the executive board, and P. H. Kraaijvanger, head of the Planning Department.

A. M. Lels, member of the executive board, and J. L. A. Drabbe, previously line manager of the Mexico/Gulf/South-Atlantic freight services, are managing directors of Holland-America Line Freight Corporation.

In addition, three main groups were formed within the parent company—finance division, fleet division and personnel division.

Blount Marine To Build Excursion Vessel And Double-Ended Ferry

Blount Marine Corp., Warren, R.I., has announced the signing of contracts to construct a 450-passenger excursion vessel and a 20-car double-ended vehicular-passenger ferry.

Straits Transit, Inc., of Mackinaw City, Mich., has ordered an 85 foot by 28 foot Class T/L 450-passenger vessel scheduled for delivery in the spring of 1969. The twin-screw vessel will be powered by a pair of General Motors 12V-71 diesels. When in operation, the new vessel will operate between Mackinaw City and Mackinac Island in the Michigan Straits. It will join another Blount-built boat, Island Queen, delivered to the same owners via the Erie Canal in 1966.

The Class T/L vehicular-passenger vessel is being built for Lake Champlain Transportation Co., of Burlington, Vt. The 100 foot by 40 foot 4-lane double-ended ferry has a capacity of 20 cars and its two center lanes can accommodate any vehicle permitted on the highways. It will operate on Lake Champlain, between Vermont and New York.

The vessel will be powered by a single General Motors 12V-71 diesel through a Blount-designed double-screw gear belt reduction drive. The propulsion drive will be similar

to those used on the Essex, Abnaki, and Algonquin, other Blount-built ferries operated by the owners of the new vessel.

Delivery is scheduled in late spring of 1969.

A.B. Carlin Named General Superintendent For Bethlehem-Hoboken

Douglas Mansell, general manager of Bethlehem Steel Corporation's Hoboken ship repair yard, has announced the appointment of Andrew B. Carlin as general superintendent of the yard.

Mr. Carlin, succeeds John J. Brangan, who has been appointed assistant manager of Bethlehem Steel's San Pedro, Calif., ship repair yard.

Mr. Carlin joined the Bethlehem organization at its then Brooklyn 56th Street yard in mid-1940, was transferred to the Hoboken yard early in 1962, and was appointed assistant general superintendent in September 1963.

Mr. Mansell also announced the appointment of Bernard J. Ernst, to succeed Mr. Carlin as assistant general superintendent. Mr. Ernst, who has been serving as a ship superintendent, became associated with Bethlehem at its then Staten Island yard, late in 1940, and was transferred to the Hoboken yard in mid-1960.

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C&O Installs AM-SSB Radio Equipment Meeting Lakes And FCC Regulations

Great Lakes vessel operators have been faced with an increasingly expensive and frustrating dilemma in maintaining AM communications during the last few years. This is somewhat ironic in view of the highly advanced communications on the Lakes, particularly the VHF/FM system which long predated that of the rest of the country and was used as a base for international standards.

Now, conversely, and in large part due to the high requirements for communications established by the Great Lakes Radio Agreement itself, the Lakes have taken a back seat in the conversion from AM to AM-single sideband radiotelephone systems. The FCC has set a deadline of 1972 for complete conversion. While AM-SSB installations have been making rapid pace elsewhere, until recently there was no type-accepted SSB equipment available that would fully satisfy the continuing AM needs and requirements on the Lakes.

The problem centers on the requirement for at least 50 watts carrier power on the AM frequencies. The signal strength on most AM-SSB radiotelephones—rated up to 150 watts p.e.p. for SSB transmission—drops to about 35 watts on the compatible AM mode (A3HO). This problem is further compounded by the fact that the type-acceptance standards established by the 1954 Agreement required suppression of harmonic emissions and tightened frequency tolerances for AM transmitters. All new equipment had to be type-accepted after 1958, and existing equipment that did not meet the standards became illegal when the current license expired.

However, by the time licenses



C&O communication engineers, **Henry S. J. Minkes** (left) and **Lawrence Del Papa**, set company requirements for radio equipment.

began to expire on AM equipment that was not type-accepted, the FCC had already initiated new rules and was urging early conversion to SSB radiotelephones.

At least one Lake carrier, the Chesapeake & Ohio Railroad, held out for AM-SSB equipment that would meet the conversion requirements for the Great Lakes. They obtained several extensions on the licenses for old equipment until they found an AM-SSB system which met their requirements.

Of course, there have been other factors inhibiting the conversion to single sideband, such as the elimination of the selective calling provided on most AM sets on the Lakes. Five channels are constantly monitored by a selective ringer, since vessels often have to be reached on short notice. But this loss will be somewhat offset by the increased business and operational uses of the SSB frequencies above 4MHz.

The solution to the problem was found in engineering an AM-SSB radiotelephone that provided the 6A3 (pure AM) mode in addition to the reduced power compatible AM. This set not only met the technical requirements for radiotelephone installations on the Great Lakes, but also in the more prac-



Capt. **Harold Altschwager** on the train ferry *Spartan*, tunes radiotelephone. The unit more than fulfills FCC requirements.

tical sense assured operators of full power AM communications during the changeover to SSB. At the same time, it provided additional SSB business frequencies.

According to **Henry S. J. Minkes** and **Lawrence Del Papa**, communications engineers for the C&O, they were surprised to find that the equipment that would meet their needs was manufactured right in their own home town of Huntington, West Va., by Com/Nav Electronics, Inc.

The C&O has now installed Com/Nav model SSB-M150 radiotelephones on all seven of their ships. With full 150-watt R.F. power on the 6A3 AM mode, the AM signal is further maximized by an antenna coupler and 100 percent modulation capability. Even on remote control the set has full squelch to eliminate noise while monitoring.

The C&O ships are presently using the 11 channel Com/Nav SSB radiotelephones for AM communications on the 6A3 mode in the same way as the old AM sets. However, Mr. **Minkes** is strongly considering the possibility of 100 percent communications from land that would result from licensing SSB frequencies in the near future. Short range business communications are presently conducted over a VHF radio system licensed under the land mobilephone service in conjunction with the company's railroad operation.

The C&O vessels, such as the *Spartan* and the *Badger*, provide service on Lake Michigan between Ludington on the east side of the Lake and Milwaukee, Manitowoc and Kewaunee on the west. The modern 410-foot ships speed across the lake at 18 mph with loads of up to 26 railroad cars, 50 automobiles and 500 passengers.

Although only in use for a short time, AM communications on the 6A3 mode of the Com/Nav SSB-M150 has more than won the confidence of the C&O captains and mates who depend on good AM communications for safety in navigating the often close traffic on the Lakes, especially during the rough winter weather.

Nickum Urges State To Buy Three Ferries For Puget Sound Use

The purchase of three more superferries for cross-Puget Sound use was recommended to the State of Washington Toll Bridge Authority by the state's consultant, W. C. Nickum & Sons Co., Seattle naval architects and marine engineers.

The consultant recommended that the 382-foot ferries be ordered by late this year or early next year, enabling delivery of two vessels in 1971 and one in 1972.

Each ferry would cost about \$6.9-million. They would be the same length but two feet wider than the state's four superferries now in use. The wider beam would be to accommodate camper trucks.

Nickum also recommended an open promenade on both sides of the deckhouse as a tourist attraction.

The ferries would have a top speed of 18.8 knots, with a cruising speed of 17.5 knots.

World-Wide Orders 227,000-Dwt Tanker From Gotaverken

At a ceremony in Hong Kong, **Y. K. Pao**, governing director of World-Wide, (Shipping) Limited, signed a contract with Dr. **N. Svensson**, managing director of Aktiebolaget Gotaverken A.B., for a further 227,000-ton tanker in the series placed by the World-Wide Shipping Group with the yard.

The addition of this ship to World-Wide's fleet will bring the total to well in excess of 3,000,000 tons.

This latest tanker will be delivered in June, 1971, and like the previous ships on order this ship will have an overall length of 1,090 feet and a maximum draft of 67 feet 7 inches. Her *Stal-Laval* 32,450-shp engines will give her a loaded speed of 16.6 knots.

Savitsky Appointed Deputy Director Of Davidson Laboratory

Daniel Savitsky, associate professor of ocean engineering at Stevens Institute of Technology, has been appointed deputy director of Davidson Laboratory at the engineering and science college.

He succeeds **Hugh W. MacDonald**, who has become assistant director of research at the college on a full-time basis. Prior to this change, Mr. **MacDonald** served part time as both assistant director of research and deputy director of the laboratory.

At the laboratory, which is the world's largest non-government hydrodynamics facility, Mr. **Savitsky** has been serving as manager of the Applied Mechanics Group. As a member of the faculty, he will continue to devote a portion of his time to teaching in the Department of Ocean Engineering.



One of seven C&O Railroad train ferries using Com/Nav AM-SSB radiotelephones.



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American Ship Acquires Standard Metal And Globe Transportation

Directors of the American Ship Building Company met recently in Lorain, Ohio, and approved acquisition of Standard Metal Fabricating Co. and its affiliated company, Globe Transportation Co., for cash and notes. Standard Metal Fabricating's annual sales approximate \$2½-million a year. The newly

acquired operation has plants in Omaha, Nebr. and Denver, Colo.

"This acquisition, when joined with our Cincinnati Sheet Metal & Roofing division, extends the marketing area for building products of American Ship into the midwest and western areas of the United States," noted American Ship President Jacob O. Kamm, who concluded the transaction.

The acquisition of Standard

Metal Fabricating Co. is the fourth completed since the new management team headed by 38-year old chairman George M. Steinbrenner III took over the reins of American Ship 15 months ago.

"We are confident of further developments in our acquisition program in the immediate future," said Mr. Steinbrenner. "Our interests are centered in the areas of shipbuilding and ship repair, metal

fabrication and building materials, transportation, material and cargo handling, marine technology and pollution control. These are fields in which we see great growth potential and where we already possess competent management and technical know-how."

Mobil Sales & Supply Publishes Book Listing 375 Ports For Service

An up-to-date port lubrication book has been published by the marine trade department of Mobil Sales and Supply Corporation, 150 East 42nd Street, New York, N.Y. 10017.

Titled "Mobil Marine Lubricants, Ports and Services Guide," the 40-page issue lists names, telephone numbers and cable addresses of the companies handling Mobil products at 375 ports throughout the world.

Service facilities are specified for each port, and a section is devoted to product descriptions and characteristics. In addition, there is a guide to correct marine lubrication plus a metric/linear conversion table and a centigrade/fahrenheit comparison chart.

Marine Square Club Names Drew President



Verne N. Drew

Verne N. Drew has been named president of the Marine Square Club, a fraternal club composed of men associated with the marine industry. His term of office is for the year of 1969.

Mr. Drew was formerly the marine manager of the American Oil Company, with a large fleet of oil tankers under his control, and is well-known in the industry. After leaving the American Oil Company, he opened his own office as a marine consultant and is now active in consultative work and maritime arbitration activities.

He is a member of the Society of Maritime Arbitrators, The Society of Naval Architects and Marine Engineers and was formerly a member of The Society of Marine Port Engineers New York.

Among the several philanthropic activities of the Marine Square Club, is the sponsorship of a scholarship fund for deserving students of the New York State Maritime College at Fort Schuyler, New York. Mr. Drew has been a member of this scholarship committee for many years, assisting young men in becoming officers in the American merchant marine.

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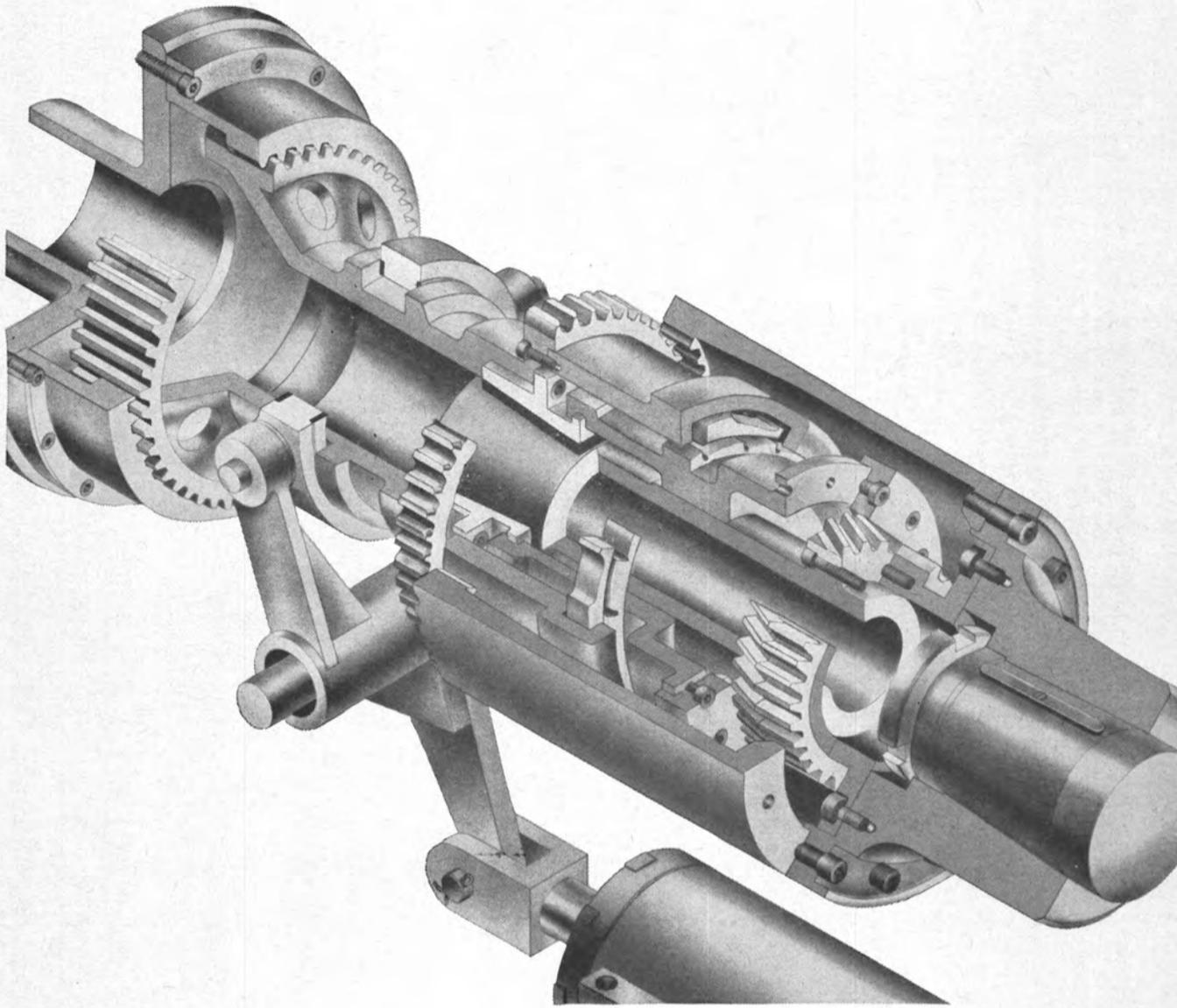


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Koppers has expanded from their full line of shaft couplings, with a licensing arrangement for the Maag Synchronizing Clutch. Utilizing the double engagement gear coupling principle for torque transmission, this unit features a hydraulically-controlled synchronizing mechanism. It engages or disengages on definite command only.

With this move, Koppers can now be of even greater service in helping you transmit power efficiently and profitably. Koppers Company, Inc., Power Transmission Department, 3602 Scott Street, Baltimore, Maryland 21203.

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BALTIC SEA

30

orders received until end 1968

Yard No.	Owner	Remarks	Yard No.	Owner	Remarks
614	German	delivered	621	German	work in hand
615	German	"	622	German	"
616	German	"	623	German	"
617	German	launched	624	German	"
618	German	keel laid	625	Foreign	"
619	German	"	626	Foreign	"
620	German	"			

FLensburg

FLensburgURGER
SCHIFFSBAU-GESELLSCHAFT

WEST GERMANY

Yard No.	Owner	Remarks
355	German	keel laid
356	German	work in hand
357	Foreign	"
358	Foreign	"
360	Foreign	"

BREMERHAVEN

RICKMERS WERFT

Yard No.	Owner	Remarks	Yard No.	Owner	Remarks
942	Foreign	keel laid	953	German	work in hand
943	Foreign	"	954	German	"
948	German	"	966	German	"
949	German	work in hand	967	German	"
950	German	"	968	Foreign	"
951	Foreign	"	969	Foreign	"

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Crowley Exhibit To Feature Tugs, Barges And Crew Boats

At the Offshore Exploration Conference to be held in San Diego, Calif., March 4-7, 1969, the Crowley Launch and Tugboat Co. exhibit will feature action photos and scale models of tugboats, barges, and other marine equipment operated by the following affiliated firms: Shipowners & Merchants Towboat Co., Ltd., and United Transportation Co., both of San Francisco; Puget Sound Tug & Barge Company and Alaska Hydro-Train, both of Seattle, and Rig Tenders, Inc., of Denver.



Sea Swift, and sistership Sea Flyer, at 7,000 hp each, are the most powerful vessels of this type on the Pacific Coast. These new oceangoing tugs were constructed at McDermott Shipyard, Morgan City, La., and are now part of the Red Stack fleet operated by Puget Sound Tug & Barge Company of Seattle, Wash.



The Kodiak—one of a large fleet of super barges, more popularly known as Hydro-Trains—departing from Seattle harbor with a full load of railroad cars bound for destinations located throughout the Alaska rail belt.



Barge 101, one of the largest bulk petroleum carrier of its type in the world, is shown being launched at Gunderson Bros. Engineering Corporation, Portland, Ore.



The crewboat Condor, one of a large fleet of crew and supply boats operated by Rig Tenders, Inc. in servicing offshore oil rigs in Alaska's Cook Inlet.

Included among the Crowley displays at OECON will be a model of the most powerful tugboat on the Pacific Coast, the 7,000-hp Sea Swift, operated by Puget Sound Tug & Barge Company. This vessel and a sistership, the Sea Flyer, are now in service on the Hydro-Train run between Seattle and Alaska. The Alaska Hydro-Train display will include a model of a Hydro-Train which, because of its economy

and convenience, has made United States transportation history.

Shipowners & Merchants Towboat Co., Ltd., better known as The Redstack Line, will have on hand a model of one of its high-powered, seagoing tugboats. United Transportation Co., which operates oceangoing petroleum barges, will exhibit photos of its newest, the No. 101, one of the largest of its kind in the United States.

Rig Tenders, Inc. operates crew boats and supply vessels that have been active in Alaska's Cook Inlet serving the offshore oil industry of that area, and is now operating vessels in the Santa Barbara channel offshore exploration area. Photos of these and other vessels suitable for many and varied types of offshore-oil and oceanographic exploration work will be another feature of the exhibit that will be on display in the Crowley Launch and Tugboat Co. booth at OECON.

American Ship Realigns Management And Operations

The board of directors of The American Ship Building Company, Lorain, Ohio, approved top level administrative and operational changes designed to smooth the way for an aggressive acquisition and expansion program for the company in the immediate future.

George M. Steinbrenner III, who had served as president since October 1967, was named chairman and chief executive officer.

Dr. Jacob O. Kamm, who had served as executive vice-president for the same period, was named president.

In the operational reorganization, the directors approved the establishment of four major divisions covering the selected areas in which the company plans to enlarge and expand. The four major areas are:

Shipbuilding and Ship Repair Division—This division will include the Lorain, Toledo and Chicago shipyards and all related facilities.

Transportation, Cargo and Material Handling Division—This will include the 15 bulk cargo ships presently owned by American Ship in their Kinsman Marine Transit division. Also included is the company's interest in Great Lakes Associates, the firm which controls grain handling in Buffalo, N.Y.

Metal Fabricating and Building Materials Division—Included under this division are Cincinnati Sheet Metal and Roofing Co. and Pope Products, Inc. of Greenfield, Ind., a recently acquired company engaged in metal building construction.

Marine Technology and Pollution Control Division—This includes the Biogest Division, a pioneer in shipboard waste control, and the company's expanding work in all areas of water pollution control. Also included is their interests in the field of oceanography. American Ship is presently constructing in their Toledo yards, the country's most modern oceanography research vessel for the Coast and Geodetic Survey Branch of the U.S. Government.

Atlantic Richfield Promotes E.V. Stewart

Atlantic Richfield Company of Philadelphia, Pa., has announced the appointment of Edward V. Stewart Jr., as superintendent of construction and repair in the Marine Department at the Fort Mifflin terminal.

Mr. Stewart had been technical assistant in the Marine Department since joining the company in 1952.

A native of Jamesville, Va., Mr. Stewart holds a B.S. degree in naval architecture and marine engineering from the University of Michigan.

Landfill Begins At Port Jersey For Largest Privately Owned Containership Complex

One of the world's largest hydraulic dredges went into operation on January 16 in Upper New York Bay off Jersey City as landfill operations began on Port Jersey—a 410-acre tract on which will be built the nation's largest privately owned industrial park/containership complex.

The 225-foot-long electric-powered dredge—Sensibar Sons—is performing double duty. As it provides landfill for Port Jersey Industrial Center it is also creating a new channel which will be used for access to the 17 containership berths that are planned.

The dredge is owned by Construction Aggregates Corporation, Chicago, an international engineering firm that specializes in landfill and reclamation projects. Construction Aggregates is the principal stockholder in Port Jersey Corporation, owner of the complex.

According to Robert N. Macmillan, Port Jersey's chief engineer, during the next six to eight weeks the dredge will suck up sand which will be used to bring the first 100 acres of the Port Jersey tract up to grade—10 to 15 feet above mean sea level. An industrial park will be built on this portion of the site. Subsequently, the dredge will be used for landfill operations in an area that is now completely beneath the waters of the bay. The containerport will be constructed on this portion of the site.

Following a period during which the fill will be allowed to settle, construction will begin on the first building in the industrial park. Designed by Comparetto & Kenny, the Jersey City architectural and engineering firm, the building is slated for completion in July.

According to Clinton B. Snyder, president, C. B. Snyder Organizations, Jersey City, exclusive brokers for Port Jersey Industrial Center:

"Other structures each having a minimum floor space of 100,000 square feet will be erected on sites five acres or larger to suit long-term lessees. Land coverage of the industrial park will be 50 percent."

The second phase of the development of Port Jersey Industrial Center will entail the filling of about 300 acres now under the waters of the bay and the construction of the containerport and ancillary structures.

The Port Jersey site—partly in Jersey City and partly in Bayonne, N.J.—has one of the most commercially strategic locations in the country. In addition to its location on deep water, it will have direct access to the New Jersey Turnpike and the neighboring Greenville yards of the Penn Central Railroad. Newark Airport and lower Manhattan are only minutes away.

Lynn Childs Appointed Valley Line V-P

The Valley Line Company, 411 N. Seventh Street, St. Louis, Mo. 63101, announced recently the appointment of Lynn Childs as vice-president. He will maintain his office in Chicago.

Mr. Childs attended Illinois Wesleyan College.

He entered the river-transportation business in September 1938 with Central Barge Company and when Central merged with Mississippi Valley Barge Line Company (now The Valley Line Company) in 1952, Mr. Childs was named manager of sales, Chicago.

Mr. Childs is past president of the Illinois River Carriers Association and a member of the Union League Club, Traffic Club of Chicago, and the Propeller Club of Chicago.

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TWENTIETH ANNUAL

Institute on FOREIGN TRANSPORTATION AND PORT OPERATIONS

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MARCH 24-28, 1969

Tulane University's Institute on Foreign Transportation and Port Operations was the recipient of the 1963 National Defense Transportation Award—the only organization in the history of the Association to receive this award. The next Institute will be held at the University Center, Tulane University, New Orleans, Louisiana, on March 24-28, 1969. A registration fee of \$125.00 includes five special luncheons and one dinner session.

The Institute conducts an educational program on handling exports and imports, designed to improve the competence of executives (present and prospective) including junior executives in charge of actual operations and senior executives responsible for planning and directing of operations.

A copy of the program may be obtained by writing to Mrs. Doris G. Campbell, Executive Secretary, Institute on Foreign Transportation and Port Operations, Norman Mayer Building, Tulane University, New Orleans, Louisiana 70118.

Barge Construction

Albina Engine & Machine Works, Inc., Portland, Ore., is to build three deck cargo barges for Pacific Inland Navigation Co., Vancouver, Wash. The dimensions for each barge will be 160 feet by 46 feet by 9 feet 4 inches and they will be of 1,600 dwt.

Bethlehem-San Francisco Yard is to build a railroad freight carfloat for Harbor Tug & Barge Co. of San Francisco, Calif. Designated Hull No. 4104, it will have dimensions of 400 feet by 76 feet by 20 feet. This 5,051-gt carfloat will be capable of carrying 38 freight cars. It is in addition to the four recently completed carfloats.

Dravo Corp., Pittsburgh, Pa., is building two 1,400-dwt bulk cement barges for Halliburton Co., New Orleans, La. The dimensions for each barge will be: length—195 feet; beam—35 feet; depth—12 feet. In addition, Dravo Corp. has already started construction on ten tank barges for stock purposes. The dimensions for each 1,400-dwt barge are: 195 feet by 35 feet by 12 feet.

Gretna Machine & Iron Works, Inc., Harvey, La., is constructing a 5,000-dwt oil barge for Seaboard Shipping Corp., New York. The dimensions are 325 feet in length, 54 feet in beam, and 16 feet 3 inches in depth.

Hillman Barge & Construction Co. of Pittsburgh, Pa., was contracted by Allied Chemical Corp. of New York to build two tank barges. The dimensions for each barge are to be 200 feet by 35 feet by 12 feet 6 inches and each will be of 1,500-dwt.

Jeffboat, Inc., Jeffersonville, Ind., is to build ten hopper barges for M/G Transport Service of Cincinnati, Ohio. Each of the ten barges will have dimensions of 195 feet by 35 feet by 12 feet and be of 1,400-dwt. In addition, Jeffboat will also build four tank barges for the same company. Two of the barges will have dimensions of 200 feet in length and two will be 195 feet in length. Each barge will have a 52-foot 6-inch beam, a depth of 12 feet 6 inches and be of 2,200 dwt.

Levingston Shipbuilding Co., Orange, Texas, is to build an offshore, oil-well drilling barge for Williams Drilling Co. Designated Hull No. 681, it will have dimensions of 150 feet by 38 feet by 12 feet and be equipped with 2,000-bhp diesel-electric machinery. It will be named Rig No. 11.

Nashville (Tenn.) Bridge Co. is to construct an ocean-going deck cargo barge for undisclosed interests. Designated Hull No. 1983, it will have dimensions of 196 feet by 48 feet by 12 feet and be of 2,500 dwt.

Fiat Engines To Power Two Drive-On Ships

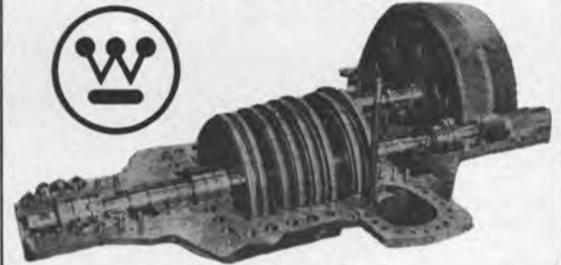
Two large, fast and highly specialized drive-on/drive-off car carriers are to be built at the German shipyard Blohm und Voss of Hamburg on behalf of the Ugland Group, Grimstad, Norway.

Each ship is reported to have a loading capacity for 2,800 cars for ocean-crossing voyages. Propulsion for each ship will be two Fiat engines type C. 4216.SS, each developing 7,200-bhp at 450-rpm. Geared to one variable pitch propeller, the engines will give the ship a trial speed of about 21 knots.

This is another proof of the great confidence gained among shipowners by the Fiat medium-speed engines for marine propulsion in multi-engine installations.

The four engines for Ugland significantly increase the order book of Fiat medium-speed engines for marine propulsion. More than 40 orders were placed for these engines in 1968 for Italian and foreign ships.

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The Amazon reports: one year later

The performance of our Bethalume ropes on the *Amazon* was told briefly in the advertisement below. We wanted to know more about the total service life of these aluminum-coated cables. So again we got in touch with the owner of the trawler.

He reports that most of the 9/16 in. ropes lasted until February 1968, almost 25 months

after the original installation. What's more, they outwore one additional set of bridles coated with a competitive material. That's a total of *three* sets of bridles.

We would like to tell you more about the money-saving advantages of Bethalume. Bethlehem Steel Corporation, Bethlehem, PA 18016

BETHLEHEM STEEL

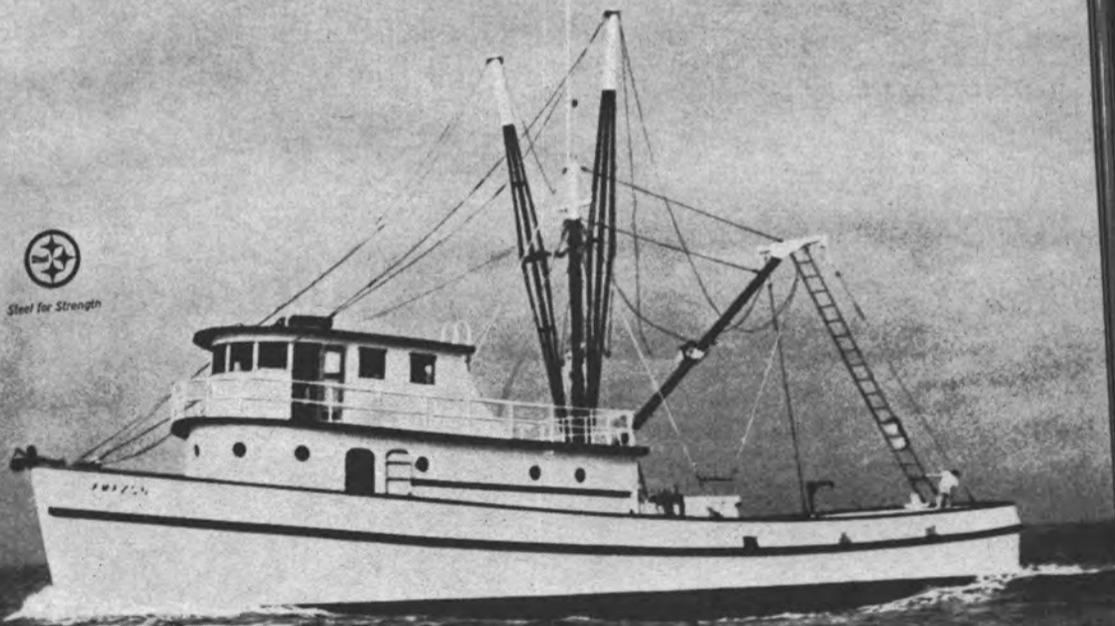


Bethalume shrimp rope outwears two others

Still in service after 23 months are 2,300 ft of Bethalume trawling cables installed on the *Amazon*, a modern freezer-trawler that harvests shrimp out of Puerto Rico. The 9/16-in. aluminum-coated cables were put in service in January, 1966, and have outworn two competitive wire rope bridles.

Preliminary results of our testing indicate strong evidence that Bethalume reduces the effects of marine corrosion. When final results are available, they will be publicized. To discuss this new coating for a particular application, get in touch with us. Bethlehem Steel Corporation, Bethlehem, Pa. 18016.

BETHLEHEM STEEL



Steel for Strength

F.L. Betz To Organize Lykes SEABEE Staff

F. LaMar Betz has been transferred from Chicago to New Orleans to head a task force preparing for the delivery of the company's revolutionary new SEABEE barge and intermodal carriers, Joseph T. Lykes Jr., chairman of Lykes Bros. Steamship Co., Inc. has announced.

Mr. Betz has been mid-western district traffic manager for Lykes in Chicago since 1966. As manager of the Lykes SEABEE Project, Mr. Betz will be responsible for organizing the staff that will ultimately operate the three Lykes Lines ocean giants when they are delivered by the Quincy, Mass., shipyard of the General Dynamics Corporation in 1971.

Unlike any common carrier of freight ever

built before, the Lykes SEABEES will be the largest such ships in the world. They will be 875 feet long and 106 feet wide, powered by a 36,000-hp steam plant, the largest ever installed in any previous single-screw cargo ship, and will be capable of a speed of 20 knots or better.

Building at a cost of more than \$37,000,000 each, including the 266 barges required to service the three ships, the new Lykes design represents a whole new concept in ocean cargo transportation, providing a superior system of cargo handling unlike anything ever attempted in the history of world shipping.

Mr. Betz joined the Lykes organization in New Orleans in 1957. He was transferred to New York in 1959 and was made assistant New York traffic manager in 1961, and later the same year became chartering manager for Lykes. In 1962 he shifted to Brownsville, Texas, as manager and was named district traffic representative for Lykes at Houston in 1963. He was made assistant manager at Houston in 1964 and promoted to manager in 1966, moving to the Chicago post later the same year.

A native of Quakertown, Pa., Mr. Betz graduated with honors from Lehigh University, Bethlehem, Pa., where he majored in finance and economics. He is a Phi Beta Kappa as well as a member of Beta Gamma Sigma Honorary Society.



SYSTEMATIC—The Port of Oakland, largest container-port on the Pacific Coast, is the first West Coast port to employ the 'total container terminal system' concept engineered by Paceco, a division of Fruehauf Corp., Alameda, Calif. The continuous-flow system employs specialized transfer and conveyance modules to speed movement of containers between ship and terminal yard. It consists of the pierside 'Portainer' crane (top) for high-speed loading or unloading, low-cost flatbed trucks, and two mobile yard cranes known as 'Transtainers' (bottom). The flatbed trucks are a fast, economical means of conveying containers from the 'Portainer' to the terminal. There the versatile 'Transtainer' transfers containers from flatbeds directly to rail car and road-haul chassis, or stacks them five rows wide and three high in the storage yard. The first East Coast port to utilize this system was Norfolk International Terminals.

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Streamlined Towing Winch Announced By Western Gear

A new design for a combination towing/anchor handling winch, named 'Winch Master,' has been pioneered by Western Gear Corporation's Southwestern Division, at Houston, Texas.

The Winch Master's advanced design results from adapting many precision machining features of the rugged and reliable series of marine propulsion gears manufactured by the Southwestern Division.

It is the first towing winch to use an entirely helical gear drive train, one in which the primary or reduction gear is an integral unit with the drum gear. The double-helical, herringbone drum gear assures maximum dependability with four teeth meshed against the strain of the towing cable. The helical gears also give the winch superior shock load absorption. The integral gear train provides a more compact towing winch of greater capacity.

Every step possible has been taken in the design of this winch to prevent corrosion and assure proper lubrication. The helical gear drive is completely enclosed in a weatherproof gear case with a self-contained lubrication-oil system. This greatly extends the life expectancy of the winch.

Brakes are oversize for ocean towing demands, with automatic emergency braking and drum dogs for lock-up conditions. Western's diamond screw level wind can be mounted as optional equipment.

The primary gear case rotates to accommodate different power units, and has easy access for ratio change. Although hydraulic power is standard, the heavy-duty, multi-speed transmission has optional provision for electric motor or diesel engine with torque converter. Dual- or single-drum capstans are individually powered for maximum versatility.

There are six single-drum Winch Master models, having up to 2¼-inch cable size with 2,500-foot capacity. Double-drum models are available in side-by-side, and waterfall types.

For further information on the Winch Master, call or write Ray Haley, sales manager, Western Gear Corporation, Southwestern Division, P.O. Box 4008, Houston, Texas 77003. Telephone: (713) 224-8911.



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- 1—Worthington Aux. & Main Feed Type 2-UQS-2 150 GPM @ 1465 T.D.H.
- 1—Worthington Aux. Cond. Circ. Type 6-L-1 1500 GPM—27' HD.
- 2—Worthington Main Cond. Vert. Type 2½ UZS-1 120 GPM @ 185' T.D.H. with motor 230 V. D. C.
- 1—Worthington Aux. Condensate Type 3 X 1½ SSL-20 GPM @ 185' HD.
- 1—Worthington Aux. Circ. D4-1½ Bronze 80 GPM—with Motor 230 V. D. C.

POWER

- 1—Worthington Sanitary 2½ X 2, 30 GPM—80 P.S.I.G.
- 1—Worthington Drink Water 2½ X 2, 10 GPM—70 P.S.I.G.
- 1—Worthington Wash Water 2½ X 2, 10 GPM—70 P.S.I.G.

RECIPROCATING

- 3—Worthington Bilge & Ballast 10 X 11 X 18 vert. rebuilt 400 GPM—50 PSI.
- 1—Worthington Standby Lub Oil Service 7½ X 9 X 12 vert. 250 GPM—47' head.
- 1—Worthington Service & Standby Fire 12 X 11 X 18 vert. 400 GPM—125 USI.
- 2—Worthington Evap. Feed 3 X 2½ X 3 horiz. 20 GPM—50 # HD.

ROTEX

- 1—Quimby—size 2½" fuel oil service pump with motor 230 V. D. C.
- 1—Quimby fuel oil trans rotex type 4D 225 GPM with motor 230 V. D. C.
- 1—Quimby lub. oil service rotex type 4D 225 GPM with motor 230 V. D. C.

TURBINES

- 2—300 KW—General Electric turbine rotors—type DORV—325M—440 # PSI. \$4,500.00 Each
- 1—Set G.E. 6000 HP Turbine rotor—reconditioned (low pressure and high pressure rotors). \$10,000.00 Set

MISCELLANEOUS

- 2—Delaval Lube oil purifiers 55-N-13 200 GPH with motors 230 V. D. C.
- 3—Buffalo forge forced draft blowers type G-SL with G.E. 20 HP motors—recond.
- 1—G.E. Reduction Gear casing for C-2 aux. turbine, 340 KW 4873/1200 RPM.

For: **T2-SE-A1**

PUMPS

- 2—Ingersoll-Rand size 1½ NTG boiler feed pumps—200 GPM @ 575 #—recond.
- 2—Ingersoll-Rand size 3 GT fire and butterworth pumps—450 GPM @ 280' HD—recond.
- 1—Ingersoll-Rand size 2 VHM Main condensate pump 180 GPM @ 220' HD—recond.
- 2—Ingersoll-Rand size 2 CRV Sanitary service pump 120 GPM @ 50 # PSI—recond.
- 1—Ingersoll-Rand size 12 VCM Aux. circulating pump 3000 GPM @ 30' HD—recond.
- 1—Ingersoll-Rand size 2 GT Aux. condensate pump 90 GPM @ 220' head—recond.
- 2—Quimby size 2B lube oil service pump, with motors 230/3/60—recond.

GENERATORS

- 1—Westinghouse 5400 KW main gen. revolving field, re-insulated with ABS cert.
- 1—G.E. 5400 KW main gen. revolving field, with ABS cert.—recond.
- 1—G.E. 5400 KW main gen. stator, with ABS cert.—recond.
- 2—G.E. 400 KW—A.C. gen rotors, with ABS cert.—recond. \$1,800 ea.
- 1—Allis Chalmers—400 KW A.C. Gen. rotor, with ABS cert.—recond.
- 1—Allis Chalmers 75/55 KW D.C. exciter armature, with ABS cert.—recond.
- 2—G.E. 75/55 KW D.C. exciter armatures, with ABS cert.—recond. \$1,800 ea.

TURBINES



- 2—G.E. 525 KW Turbine rotors, with ABS cert.—recond. \$4,500.00
- 1—G.E. 535 KW Turbine rotor, with ABS cert.—recond.
- 1—G.E. 5400 KW Turbine rotor—(7000 HP) with ABS cert.—recond. \$10,000.00
- 1—Elliott 5400 KW Turbine rotor with ABS cert.—recond.
- 1—G.E. 5400 KW Turbine rotor (8250 HP) with ABS cert.—recond.
- 1—G. E. 115 HP boiler feed pump turbine—complete.

VALVES

- 1—24" overboard discharge valve, unused with ABS certificate. \$2,400.00

COOLERS

- 1—Westinghouse main generator air cooler—unused. \$1,900.00
- 1—Westinghouse main motor air cooler—unused.
- 1—G.E. Main generator air cooler—reconditioned.
- 1—G.E. Main motor cooler—reconditioned. \$1,300.00
- 2—Ross Lube oil coolers—reconditioned. \$680.00 ea.

TAILSHAFTS

- 1—T2-SE-A1 Tailshaft—New with ABS cert.
- 1—T2-SE-A1 Tailshaft reconditioned with ABS cert.

FOR: T2-SE-A2 MISSION TYPE

- 1—G.E. 40 HP Forced Draft fan turbine complete reconditioned. \$2,500.00
- 1—G.E. 535 KW Turbine rotor reconditioned. \$4,500.00
- 2—Jerguson boiler gauge glass assemblies complete unused. \$720.00 ea.

FOR: C4-S-1A MARINER CLASS

- 2—Worthington size 4-UZS-2 unused 275 GPM—56.6 LB. head with motors—440 V. 3 phase—60 cycles. \$1,600.00 each

EVAPORATOR

- 1—40 ton per day Eureka L/P solo shell, single effect, complete with motors and pumps, used in excellent conditioned mfgd. in 1956. \$6,500.00

FOR: AP-2 VICTORY

- 1—New tailshaft with ABS certificate \$6,500.00
- 1—New Propeller with ABS certificate \$17,500.00

TURBINES — MISCELLANEOUS

- 1—Westinghouse 500 KW generator rotor rewind \$8,700.00

PUMPS — MISCELLANEOUS

- 2—Warren drain transfer type 2SSV—7½ rebuilt with motors 440/3/60. \$1,700.00
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Cardwell Machine Promotes D.A. Gardiner And W.E. Cross



Duane A. Gardiner



Wiley E. Cross Jr.

Promotions for two staff members of The Cardwell Machine Company, Richmond, Va., have been announced by Henry S. Holland III, president.

Duane A. Gardiner becomes sales manager for Vokes Filter Division, The Cardwell Machine Company. After serving as applications engineer, he was appointed acting manager in 1967. Cardwell is the exclusive U.S. licensee to Vokes Ltd. of Guildford, Surrey, England for the manufacture and sales of Microwire, Microdisc and Stream-Line fluid filtration equipment.

Formerly a member of the Petroleum Engineers Society of Okla., Mr. Gardiner attended college in Oklahoma and held a post with Warner Lewis Company, a division of Fram Corporation in Tulsa.

Wiley E. Cross Jr., becomes chief engineer for Cardwell after having been assistant chief engineer since 1965. His background includes graduate study at Georgia Tech and service with Lockheed Aircraft and a Richmond consultant firm. He is a past chairman of the Central Virginia Section of the American Society of Mechanical Engineers.

Coolant Dispenser System For Portable Cutting Tools Introduced By Wilson

A new integrated drill-coolant system has been introduced, which permits drilling to closer tolerances, and provides longer tool life by use of a volatile no-residue cutting-tool coolant. Designated the 'Wilso-Miser' coolant dispenser system, it is a new method of applying and metering Du Pont's fast evaporating 'Freon' T-B 1 cutting-tool coolant for the portable pneumatic production tools of Thomas C. Wilson, Inc.

The new coolant dispenser system provides two-way control of the coolant to eliminate waste of the expensive fluid. First, coolant flow is completely controlled by the throttle of the portable pneumatic tool; there is no flow when the throttle is closed. Second, flow rate is adjustable for each job from a solid stream through varying degrees of atomization to complete shut-off so that only the pre-set amount of coolant flows and it flows only when the tool is operating.

Initially, the new coolant dispenser system is available for Wilson's Model 95 drill but can readily be adapted to a variety of pneumatic tools for applications such as drilling, reaming, or tapping materials, ranging from carbon steels to titanium and other exotic metals.

The coolant itself is completely safe; toxicity is of a low order, it is non-flammable, non-corrosive, and inert. It vaporizes rapidly to eliminate the time-consuming cleanup of work pieces that is associated with conventional 'wet' coolants.

Additional information on the Wilso-Miser coolant dispenser system is available from the system designer and tool manufacturer, Thomas C. Wilson, Inc., 21-11 44th Avenue, Long Island City, New York 11101.

Waterman To Convert Two Troop Transports

Waterman Steamship Co. has been given permission by the Maritime Administration to trade in two 64-year-old ferry boats for two World War II C-4 troop transports. The company intends to convert the C-4's into dry cargo vessels, with some container capacity, at a cost of \$2- \$3-million each.

The company plans to trade in the Binghamton and Elmira for the Gen. R. M. Blatchford and Gen. Leroy Eltinge.

The two, 1905-built ferries were valued at \$6,800 each and the C-4's at \$518,000 each, leaving Waterman to pay the government a total of \$1,022,500 as the difference, the Maritime Administration said.

The two C-4's are to be fitted to haul 116 twenty-foot-long containers on deck.

The exchange must be agreed to within 30 days and the actual conversion completed within a year.

Largest Privately Owned U.S. Ship Model Basin Near Completion In Maryland



Hydronautics' Ship Model Basin in Maryland will aid firm's clients and in-house generated research projects.

The largest privately owned ship model basin in the United States is now nearing completion by Hydronautics, Incorporated, according to Phillip Eisenberg, president of the Laurel, Md., technological firm. In making the announcement, Mr. Eisenberg stressed Hydronautics' conviction that the United States must maintain a strong merchant fleet, and that he believes there is a "definite need for a major professional model basin to serve the American maritime industry."

The modern towing tank facility will be used for the testing and evaluation of surface ship and submarine designs, air cushion vehicles, hydrofoil craft, offshore oil and mining equipment, and other marine vehicles with respect to their resistance, powering and performance in varying wave conditions.

The towing tank is approximately 300 feet long overall, 25 feet wide and 13 feet in depth, and is constructed of reinforced concrete. It is designed for extension up to 1,000 feet in the future. A 35-foot-long by 20-foot-wide towing carriage, having an 18-foot-long by 11-foot-wide open bay, rides on carriage rails. Present top speed of the carriage is 12 knots.

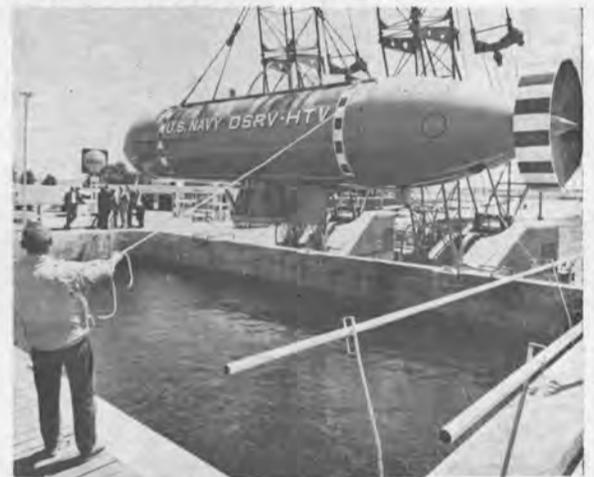
The towing tank is equipped with a plunger-type wave maker which is hydraulically driven to produce both regular and irregular seas. A beach at one end minimizes wave reflections, and side dampers are provided along the full length of the tank. The carriage bay accommodates a general purpose model support bridge capable of being yawed $\pm 15^\circ$ by remote command. The carriage is also equipped with a Planar motion mechanism system for dynamic testing of various types of marine vehicles.

General purpose instrumentation is housed in an air-conditioned room at one end of the towing carriage. A wide array of signal conditioning equipment, integrating digital voltmeters and recording equipment are provided.

The instrumentation is compatible with strain gages and reluctance, differential transformer, linear thermistor and potentiometric transducers.

Upon completion of the model basin facility and commencement of operations, Hydronautics plans to make the full resources of the facility available to its clients, as well as to use it for in-house programs.

Lockheed Delivers DSRV Training Model To Navy



Full-scale boilerplate model of Navy's Deep Submergence Rescue Vehicle (DSRV) is lowered into test tank at Lockheed Missiles & Space Co., Sunnyvale, Calif.

A full-scale 'boilerplate' model of the Deep Submergence Rescue Vehicle (DSRV) has been examined, approved for its role as 'stand-in', and officially signed over to the Navy by Lockheed Missiles & Space Company, Sunnyvale, Calif.

The stand-in model is the DSRV Handling and Training Vehicle (HTV), constructed by Lockheed under contract to the Naval Undersea Warfare Center, Pasadena, Calif.

Usually a stand-in substitutes for the star if the chief performer is unable to go on, but in this case, the stand-in will take the leading role until the play is perfected.

Substituting for the DSRV, the HTV will train the handling crews and refine the handling system for the real rescue sub. The thorough checkout of the transportation system before the DSRV goes into service will lessen the chances of a handling accident when the DSRV must be moved quickly by land, air and sea to any spot in the world.

Lockheed is presently developing the DSRV for the Navy's Deep Submergence Systems Project, Washington, D.C. Upon its completion, the DSRV will be able to begin rescue operations anywhere in the world within 24 hours of a submarine disaster.

On a typical mission, the DSRV must be loaded on and off land transport vehicles, airplanes, 'mother' submarines and surface support ships. Nelson A. Powell, Lockheed's project leader on the HTV, explained that so much transportation of so large a submarine out of water requires an efficient and dependable handling system.

"The particular problems of moving a DSRV have never before been faced," he said. "Rather than risk moving an expensive piece of precision machinery like the DSRV without knowing the complications, we plan to evaluate our handling system first with an HTV."

Constructed of carbon steel and glass-reinforced plastic, the HTV has the same overall dimensions as the DSRV. Inside the HTV are a ballast tank at mid-body and two trim tanks fore and aft.

By flooding the tanks to the proper level, the HTV's handlers can duplicate the weight, center of buoyance and center of gravity of the DSRV. The HTV can also be made to float with the same freeboard as the DSRV.

South African Marine Joins New Venture

A fresh boost to travel and tourism in South Africa should result from the formation of a new service company which will embrace shipping, air, general travel and a new hotel chain.

The new company known as Aeromarine Investments, Ltd., was announced by Dr. G. S. J. Kuschke, deputy chairman of South African Marine Corp., Ltd. and chairman of the new entity.

South African Marine Corp. will have 40 percent of the equity in the new venture, associates of South African Marine Corp. will have 20 percent and the British and Commonwealth Group will have 40 percent.

The hotel chain, representing an investment in excess of \$14-million would consist of eight to ten luxury hotels.

South African Marine Corp. was founded in 1947 with three Victory ships on the United States run. Now it has a fleet of more than 40 vessels operating on the trade routes between South Africa, Asia, Europe, the United Kingdom, South America and the United States. The company reported net profits for the year ended June 30, 1968 of \$5,273,800. The firm's American activities are directed by its subsidiary, South African Marine Corp.-N.Y., headquartered at 17 Battery Place, New York City.

British and Commonwealth Group is one of the world's largest shipping companies operating the Union-Castle Mail Steamship Co., Ltd. and the Clan Line South Africa, Ltd.

Dr. Kuschke said that activities of Aeromarine would include (a) air, sea and general travel, (b) airfreighting, (c) clearing and forwarding, (d) stevedoring, (e) ships chandling, hotel and institutional catering and (f) ships agency services at South African ports.

Headquarters of Aeromarine will be in Johannesburg. G. W. Tedder will be general manager of the company.

Management Institute To Be Held In March

The Third Annual Maritime Management Institute, under the sponsorship of the State University of New York Maritime College, has been scheduled for March 13 and 14, Rear Adm. Edward J. O'Donnell, USN (ret.), president of the college, has announced.

Admiral O'Donnell said the theme of the 1969 Institute will be "Marine Insurance In A Changing World," and he added that it will

be held in the new building of the Seamen's Church Institute, 15 State Street, New York City.

The Maritime College's Office for Continuing Education annually holds this conference to afford an opportunity for dialogue on an important facet of the maritime industry—at the upper levels; and it brings together leaders of all phases of shipping. The 1968 Maritime Management Institute delved into the various phases of the modern land-bridge concept.

The Institute will have as its general chairman Vice Adm. Paul E. Trimble, assistant commandant of the U.S. Coast Guard, Admiral O'Donnell said, adding that the two-day meeting will deal in depth with the varied needs of shippers and shipowners for insurance in maritime commerce. He said speakers will include leaders of both the shipping and insurance fields.

The Maritime Management Institute Committee, which is responsible for handling all arrangements for the coming conference, comprises Admiral O'Donnell; Dean Richard J. Long, associate dean for Continuing Education at the Maritime College; Prof. William H. Sembler, of the college's Department of Marine Transportation; Carl E. McDowell, executive vice-president of the American Institute of Marine Underwriters, and Capt. Richard N. LePage, manager of insurance claims and claim prevention, Farrell Lines, Inc. Dean Long is chairman of this committee.

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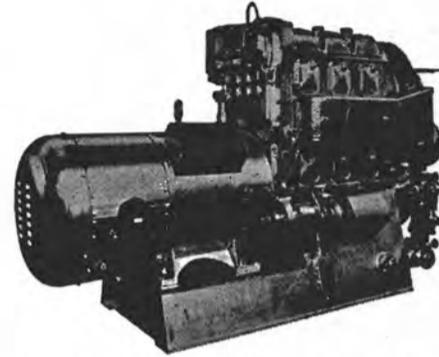


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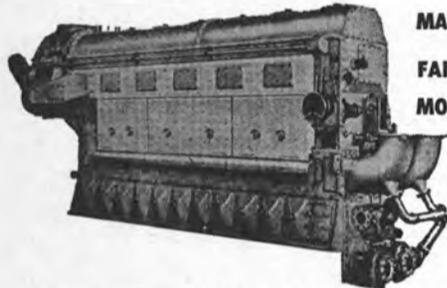
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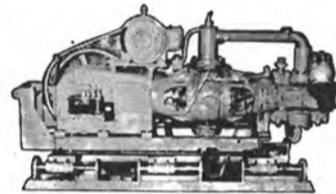
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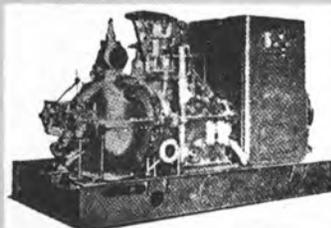
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AC PUMPS—Horizontal Centrifugal

- 2—Goulds, 2000 GPM, 470' head, Size 8x10, with Westinghouse Motors, 350 HP, 2300/3/60.
- 1—Ingersoll-Rand, 3000 GPM, 250' head, Size 8ALV, with Westinghouse Motor, 250 HP, 2200/3/60, 1775 RPM.
- 1—Worthington, 400 GPM, 150 PSI, 5½" suction, 3½" discharge, with G.E. Motor, 75 HP, 440/3/60, 3550 RPM.
- 2—Goulds, 300 GPM, 336' head, 3" suction, 2" discharge, with G.E. Motors, 50 HP, 440/3/60, 3550 RPM.
- 7—J.C. Carter, 365 GPM, 250' head, stainless steel, 3" suction, 3" discharge, with 220/440/3/60 Motors.
- 6—326 GPM, 138' head, C.I. pump housing, 3" suction, 3" discharge, with Westinghouse Motors, 20 HP, 220/440/3/60, 1755 RPM.
- 6—682 GPM, 60' TDH, C.I. pump housing, 5" suction, 5" discharge, with Westinghouse Motors, 15 HP, 220/440/3/60, 1700 RPM.
- 2—Worthington, 80 GPM, 60 PSI, 2½" suction, 2" discharge, with G.E. Motors, 8 HP, 440/3/60, 3450 RPM.
- 3—Worthington, 650 GPM, 9 PSI, 6" suction, 6" discharge, with Star Motors, 6 HP, 440/3/60.
- 1—Worthington, 175 GPM, 20 PSI, 3½" suction, 3" discharge, with G.E. Motor, 3.74 HP, 440/3/60, 3450 RPM.
- 4—Worthington, 60 GPM, 22 PSI, 3½" suction, 2" discharge, with G.E. Motors, 3 HP, 440/3/60, 3450 RPM.
- 3—Allis-Chalmers, 35 GPM, 100' head, 2" suction, 1½" discharge, with Allis-Chalmers Motors, 3 HP, 440/3/60, 3500 RPM.
- 1—Allis-Chalmers, 65 GPM, 80' head, 1½" suction, 1½" discharge, with Allis-Chalmers Motor, 3 HP, 220/440/3/60, 3500 RPM.
- 2—Worthington, 13 GPM, 51 PSI, 1½" suction, 1½" discharge, with G.E. Motors, 2.64 HP, 440/3/60, 3490 RPM.
- 1—Worthington, 75 GPM, 22", 3" suction, 2½" discharge, with G.E. motor, 1.9 HP, 440/3/60, 3450 RPM.
- 5—Worthington, 30 GPM, 30 PSI, 1½" suction, 1½" discharge, with G.E. Motors, 1.75 HP, 440/3/60.
- 14—Warren, 6 GPM, 36 PSI, 1¼" suction, 1" discharge, with G.E. Motors, 1.25 HP, 440/3/60, 3450 RPM.

AC PUMPS—Vertical Centrifugal

- 6—Worthington, 275 GPM, 56.6 PSI, 8½" suction, 3½" discharge, with G.E. Motors, 22.9 HP, 440/3/60, 1180 RPM.

- 4—Worthington, 490 GPM, 35 PSI, 7" suction, 4½" discharge, with G.E. Motors, 19.6 HP, 440/3/60, 1175 RPM.
- 6—Chicago Pump Co., submersible, 400 GPM, 6 # suction, 30 # discharge pressure, with Wagner Motors, 15 HP, 440/3/60, 1740 RPM.
- 6—Dayton-Dowd, 1160 RPM, 15 PSI, 10" suction, 8" discharge, with Wagner Motors, 10 HP, 440/3/60.
- 4—Worthington, 100 GPM, 40 PSI, 5" suction, 3" discharge, with G.E. Motors, 7.37 HP, 440/3/60, 1750 RPM.
- 4—Warren, 135 GPM, 35 PSI, 6" suction, 3" discharge, with G.E. Motors, 6 HP, 440/3/60.
- 1—Worthington, 35 GPM, 62.4 PSI, 3" suction, 2" discharge, with G.E. Motors, 5.83 HP, 440/3/60, 1150 RPM.
- 7—Allis-Chalmers, 68 GPM, 114' head, Type SSV-C, 3" suction, 1½" discharge, with Wagner Motors, 7½ HP, 440/3/60, 1750 RPM.
- 3—Worthington, 350 GPM, 11.1 PSI, 10" suction, 3½" discharge, with G.E. Motors, 5 HP, 440/3/60, 1150 RPM.
- 12—Allis-Chalmers, 10 GPM, Size 2"x2½", with Wagner Motors, 3 HP, 440/3/60, 3600 RPM.

AC PUMPS—Horizontal Rotary

- 4—Warren, 197 GPM, 175 PSI, with Electro Dynamics Motors, 30 HP, 440/3/60, 1750 RPM.
- 2—Northern, 10 GPM, 350 PSI, 3" suction, 2" discharge, 200 RPM, with G.E. geared Motors, 5 HP, 440/3/60.
- 3—DeLaval, 25 GPM, 50 PSI, with G.E. Motors, 1.8 HP, 440/3/60.

AC PUMPS—Vertical Rotary

- 2—DeLaval, 550 GPM, 50 PSI, with G.E. Motors, 27.4 HP, 440/3/60, 1180 RPM.
- 7—Quimby, Size 2½, 10/6 GPM, 350 PSI, 2½" suction, 1½" discharge, with Wagner Motors, 6/3 HP, 440/3/60, 1160/865 RPM.
- 8—Blackmer, 50 GPM, 35 PSI, 420 RPM, with G.E. geared Motors, 2 HP, 440/3/60, 1750 RPM.

DC PUMPS—Horizontal Centrifugal

- 6—Worthington, Size 8L1, 2100 GPM, 138.5 TDM, with Westinghouse Motors, 100 HP, 230 DC, 1310/1750 RPM.
- 6—Worthington, Size 12 LA1, 4000 GPM, 67.3 TDM, with Westinghouse Motors, 100 HP, 230 DC, 1310/1750 RPM.
- 6—Worthington, Size 3UB1, 400 GPM, 280' head, with Westinghouse Motor, 50 HP, 230 DC, 1310/1750 RPM.
- 2—Weil, 400 GPM, 100 PSI, with 40 HP Motors, 230 DC.
- 1—Goulds, Figure 3380, 4" suction, 3" discharge, 250 GPM, 100 PSI, with 30 HP Motor, 230 DC, 2200 RPM.
- 6—Worthington, Size 4L1, 400 GPM, 83' head, with Westinghouse Motors, 15 HP, 230 DC, 1225/1750 RPM.
- 1—Aldrich, 8" suction, 6" discharge, with G.E. Motor, 12/25 HP, 115 DC.
- 3—Warren, 1175 GPM, 11.2 PSI, with Reliance Motors, 10 HP, 230 DC.
- 4—Gardner-Denver, 900 GPM, 30' head, with Crocker-Wheeler Motors, 10 HP, 230 DC.
- 1—Westco, 100 GPM, 100 PSI, 2" suction, 2" discharge, with 10 HP Imperial Motor, 115 DC.

DC PUMPS—Horizontal Centrifugal

- 2—Yeomans, 135 GPM, 3" suction, 115' head, 3" discharge, with Kimble Motor, 10 HP, 230 Volts DC.
- 2—Warren, size 5, 600 GPM, with Electro-Dynamics Motors, 8/4.5 HP, 230 Volts DC.
- 1—Warren, 5" suction, 4" discharge, with Reliance Motor, 7½ HP, 115 Volts DC.
- 1—Dayton-Dowd, 3" suction, 2½" discharge, with Crocker-Wheeler Motor, 5 HP, 120 DC.
- 1—Ingersoll-Rand, Model A, 45 GPM, 125' head, with G.E. Motor, 5 HP, 115 Volts DC.
- 3—Ingersoll-Rand, Size 1MVR, 50 GPM, with Electro-Dynamics Motors, 3.9 HP, 230 DC.
- 1—Fairbanks-Morse, 250 GPM, 13' head, with Fairbanks-Morse Motor, 3.72 HP, 230 Volts DC.
- 2—Worthington, 150 GPM, 22 PSI, 3½" suction, 3" discharge, with Diehl Motors, 3.47 HP, 230 Volts DC.

DC PUMPS—Horizontal Centrifugal

- 1—Yeomans, 40 GPM, 75' head, 1½" suction, 1" discharge, with Master Motor, 2 HP, 230 Volts DC.
- 2—Westco, 20 GPM, 50 PSI, with Century Motors, 1½ HP, 120 Volts DC.
- 2—Worthington, 60 GPM, 23.7 PSI, 2½" suction, 2" discharge, with Diehl Motors, 1.43 HP, 230 Volts DC.
- 7—Warren, 4 GPM, 38 PSI, 1½" suction, 1" discharge, with Century Motor (4-230 DC, 3-115 DC), 1.25 HP.

DC PUMPS—Vertical Centrifugal

- 2—Buffalo, Size 3 SAV, 400 GPM, 125 TDH, with Electro-Dynamic Motors, 50 HP, 230 Volts DC, 1350/1800 RPM.
- 1—Gardner-Denver, 1500 GPM, 56' head, 8" suction, 6" discharge, with Century Motor, 30 HP, 230 Volts DC, 1750 RPM.
- 1—Ingersoll-Rand, Size 18VCM, 8500 GPM, with Electro-Dynamic Motor, 20/40 HP, 230 Volts DC, 410/545 RPM.
- 2—Worthington, 16" LAS-2, 5600 GPM, 10 PSI, with G.E. Motor, 20/40 HP, 230 Volts DC, 540/720 RPM.
- 1—Ingersoll-Rand, 10" suction, 10" discharge, 1050/2000 GPM, with G.E. Motor, 20 HP, 230 Volts DC, 805/1150 RPM.
- 1—Worthington, 340 GPM, 33.6' 6" suction, 3" discharge, with G.E. Motor, 15 HP, 230 Volts DC.
- 1—Ingersoll-Rand, 1050 GPM, 5" suction, 5" discharge, with Crocker-Wheeler Motor, 15 HP, 230 Volts DC, 1150 RPM.
- 2—Ingersoll-Rand, 450 GPM, 15' head, 4" suction, 3" discharge, with G.E. Motors, 10/15 HP, 230 Volts DC, 1300/1750 RPM.
- 1—Allis-Chalmers, 750 GPM, 30.3' head, 5" suction, 5" discharge, with Star Motor, 10 HP, 230 Volts DC, 1750 RPM.
- 2—Buffalo, Size 3SLV, 425 GPM, 35 TDH, with Electro Dynamic Motors, 7½/15 HP, 230 Volts DC, 1310/1750 RPM.
- 3—Ingersoll-Rand, Size 1VHM, 18 GPM, 75 PSI, 3¼" suction, 1½" discharge, with G.E. Motors, 7½ HP, 230 Volts DC.
- 1—Worthington, 175 GPM, 50 PSI, 4" suction, with G.E. Motor, 7½ HP, 230 Volts DC.
- 2—Ingersoll-Rand, Size 8 VCM, 1400 GPM, with Electro Dynamic Motors, 5/10 HP, 230 Volts DC, 950 RPM.
- 2—Ingersoll-Rand, Size 1½ VBM, 70 GPM, with Electro Dynamic Motors, 5/10 HP, 230 Volts DC, 1500/2000 RPM.
- 2—Ingersoll-Rand, Size 1MVR, 20 GPM, with Electro Dynamic Motors, 3/1.5 HP, 230 Volts DC, 1950/2600 RPM.
- 2—Worthington, 8" LS-1, 1400 GPM, 10 PSI, with G.E. Motors, 5/10 HP, 230 Volts DC, 875/1200 RPM.
- 2—Worthington, Type 1½ UZS-3, 20 GPM, 75 PSI, with G.E. Motors, 5 HP, 230 Volts DC, 1800 RPM.
- 2—Weil, 20 GPM, 40 PSI, 1½" suction, 1¼" discharge, with G.E. Motors, 3 HP, 230 Volts DC.

DC PUMPS—Horizontal Rotary

- 3—Worthington, Size 5GES, 400 GPM, 50 PSI, with Westinghouse Motors, 20 HP, 230 Volts DC, 1750 RPM.
- 1—DeLaval, 15 GPM, 350 PSI, 2½" suction, 2½" discharge, with Diehl Motor, 10 HP, 230 Volts DC.
- 2—Viking, Type EKK, 60 GPM, 70 PSI, 2" suction, 2" discharge, with Diehl Motors, 5 HP, 230 Volts DC.
- 3—National Transit, 50 GPM, 50 PSI, 3" suction, 2½" discharge, 3 HP, 230 Volts

DC PUMPS—Vertical Rotary

- 6—Quimby, Size 5, 400 GPM, 60 PSI, 6" suction, 5" discharge, with Westinghouse Motors, 30 HP, 230 Volts DC.
- 1—DeLaval, IMO, 250 GPM, 40 PSI, with G.E. Motor, 15/20 HP, 230 Volts DC, 1310/1750 RPM.
- 3—Worthington, Model 4GRVS, 225 GPM, 35 PSI, with G.E. Motors, 15/20 HP, 230 Volts DC.
- 4—Worthington, Model 4GRVS, 175 GPM, 50 PSI, with G.E. Motors, 7½/10 HP, 230 Volts DC.
- 1—Quimby, Size 4, 175 GPM, with Electro Dynamic Motor, 7.5/10 HP, 230 Volts DC, 865/1150 RPM.
- 2—Worthington, Type 3GRVS, 90 GPM, 75 PSI, 2¾" suction, 2½" discharge, with Diehl Motors, 7½ HP, 230 Volts DC.
- 1—Quimby, Size 2, 8 GPM, with Electro Dynamic Motor, 2/5 HP, 230 Volts DC, 575/1150 RPM.
- 2—Worthington, Type 2GRVS, 7 GPM, 400 PSI, with G.E. Motors, 2½/5 HP, 230 Volts DC, 900/1800 RPM.

BOILER FEED PUMPS — TURBINE & ELECTRIC

4—Worthington, Vertical type, single acting, triplex, constant speed, size 2¼ x 4, 47 GPM, 525 PSI, with G.E. Motors, 20 HP, 230 Volts DC.

2—Worthington, 5" UFD, 460 GPM, 750 PSI, 5" suction, 5" discharge, driven by Sturtevant Steam Turbine, Size CC-22',

Type 21, 2½" steam inlet, 5½" exhaust.

2—Aldrich Pump Co. Triplex, Vertical, Size 2½ x 4, 65 GPM, 575 PSI, with G.E. Motors, 25 HP, 230 Volts DC.

2—Ingersoll-Rand, 165 GPM, 575 PSI, with turbine drives.

TURBINE DRIVEN PUMPS — Various

2—Worthington, Size 20-LAL-18, Main Condenser, Centrifugal, 10500, 27' head, Vertical, with Whiton Turbines, 95 HP.

1—Ingersoll-Rand, Size SUV, Centrifugal, Horizontal, 1200 GPM, 225' head, 6" suction, 5" discharge, with Elliot Turbine, 84.3 HP.

1—Worthington, Fire, Flushing & Emergency Bilge, Centrifugal, Horizontal, Rating—Fire: 500 GPM, 150 PSI, Flushing: 1000 GPM, 60 PSI, Bilge: 750 GPM, 25 PSI, 5½" suction, 4½" discharge, with Whiton Turbines, 72.9 HP.

1—DeLaval, Fuel Oil Transfer, Vertical, Rotary, 250 GPM, 150 PSI, 7" suction, 6" discharge, with DeLaval Turbine, 35 BHP.

8—Goulds Main Circulating, Vertical,

Centrifugal, 3700 GPM, 13 PSI, Size 12", with Elliot Turbines, 30 HP.

2—DeLaval Fuel Oil Service, Vertical, Rotary, 50 GPM, 350 PSI, 3½" suction, 3½" discharge, with DeLaval Turbines, 14.4 HP.

4—DeLaval—IMO, L.O. Service, Vertical, Rotary, 300 GPM, 45 PSI, 6" suction, 6" discharge, with DeLaval Turbines, 14.1 HP.

8—Allis-Chalmers, Type SSC-V, 68 GPM, 114' head, 3" suction, 1½" discharge, with Carling Turbines, 7½ HP, 1750 RPM.

2—Warren, 85 GPM, 60 PSI, For Lube Oil Service, Turbine Driven.

2—Warren, Main Circulating, 3500 GPM, 13.5 PSI, Turbine Driven.



3,000 pound size
8,000 pound size
10,000 pound size

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USED, GOOD QUALITY . . . SAVE!

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ANCHOR CHAIN . . .



Used, good, with or without test certificate . . .
1 1/2" size
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2 1/4" size

ANCHOR WINDLASS

1—LIDGERWOOD horizontal Anchor Windlass, double wildcat—for 2 1/16" Chain, double gypsy, with 50 motors, 230 volts DC, complete with controls.

1—Horizontal, of German Mfg., double wildcat—for use with 3" anchor chain, double gypsy with 230 VDC motor, complete with electrical control equipment.

American Engineering, horizontal, double 2 1/8" Chain, 65 HP, 230 DC, complete.

7—American Hoist and Derrick Company, horizontal, double wildcat—for 2 1/4" chain double gypsy, 70 HP, 230 Volts DC, with electric controls.

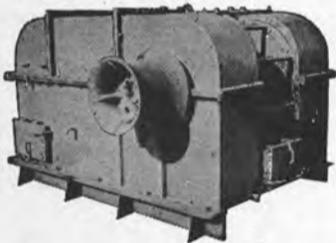
3—Hesse-Ersted, horizontal, double wildcat, 2 1/8" chain, 60 HP, 230 DC.

1—Hyde Horizontal Anchor Windlass double wildcat—for use with 2 1/8" Anchor Chain, and with General Motors Electric Motor, 60 HP, 230 volts DC, 560/1700 RPM, Type CDM 18831 AE. Complete with Contractor Panel, Resistors, and Master Switch.

ANCHOR WINCHES

2—Jaeger, single drum—capacity approximately 900' of 1 1/2" wire rope, double gypsy, with 35 HP Motors, 230 Volts DC, complete with electricals.

UNIWINCHES



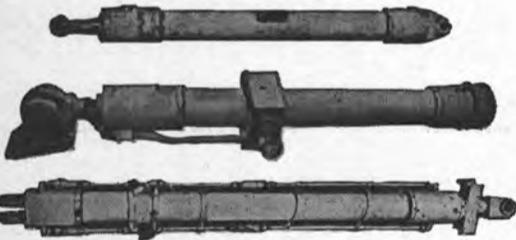
LAKESHORE UNWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.

Single speed, double drum, 7450 # at 220 FPM.

Single speed, single drum, 7450 # at 220 FPM.

Two speed, single drum, 7450 # at 220 FPM, 14400 # at 105 FPM.

HYDRAULIC CYLINDERS



3000 PSI	Bore	Stroke	Rod Diameter	Overall retracted length	Action
	10"	12"	3.75"	45 1/2"	double
	10"	26"	3.75"	58 1/2"	single
	2"	8"	1 1/2"	20"	double
	2.5"	15"	1.12"	25 1/2"	double
	3"	8"	1.37"	15 1/2"	double
	6"	8"	4"	144"	double
	13"	97"	5 1/2"	14'	double

STEERING STANDS



Brass Steering Stands. Complete with angle indicator on top, used, 11" base diameter by 35 1/2" high, and with 42" overall, 8-spoke brass steering wheel.

\$149.50 each

CAPSTAN WINDLASSES

Model CWP-3, Vertical 24" Planetary Capstan Windlasses, Single Wildcat—using 1 1/4" Anchor Chain, Single Gypsy with 20 HP motor, 230 volts DC, complete with Contactor Panel, Master Switch, and Resistors.

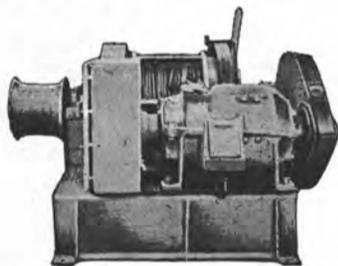


3—Hesse-Ersted Vertical, Single Wildcat—for 1 3/8" Anchor Chain, single gypsy, with HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

Hyde, Vertical, Single Wildcat, for 1 1/8" Anchor Chain, single gypsy, with 20/5 HP Motor, 440/3/60.

McKiernan—Terry, Single Wildcat—for 3/4" chain, Single Gypsy, with underdeck drive with Star Motor, 7 1/2 HP, 115 DC, with Electrical control equipment.

CARGO WINCHES



American Hoist and Derrick Company Winches with Westinghouse Motors, 50 HP, 230 Volts DC, complete with Contactor Panels, Master Switches, and Resistors. Type 66—single speed, single drum. Type 67—two speed, single drum.



CENTRIFUGES

Sharples Purifiers—For Diesel Service or for Lube Oil Service.

150 GPH—440 AC, 230 DC
350 GPH—230 DC
600 GPH—230 DC

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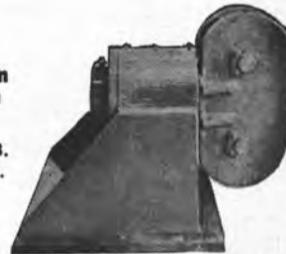


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Deluxe Design
\$1250 each

Model Design
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HIGH SPEED COUPLINGS

(Flexible Couplings between Turbines and Reducing Gear)

1—Set from C3-S1-A3 Vessel

1—Set from C2 Vessel (Moore built)

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PROPELLERS

From C2-SU Vessel

From C2 Vessel (Moore built)

From AP2 Victory Ship

From Liberty Ships and LST Vessels

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Size A 1/4	@ \$160 each
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Size A1	@ \$215 each
Size A2	@ \$290 each
Size A3	@ \$350 each
Size A4	@ \$410 each
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Size A6	@ \$550 each
Size A8	@ \$630 each
Size A10	@ \$695 each
Size A12	@ \$750 each
Size A16	@ \$900 each

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SPERRY MARK 14, Model 1 Gyro Compass, used, good, complete with Master Compass, with Binnacle, Amplifier panel, control panel, carbon pile voltage regulator, motor generator set, alarm panel, repeater panel, and repeaters with mounts.

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12" or 14" sizes, your choice

\$29.50 each

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tificates.

HP TURBINE, Allis-Chalmers, Impulse Reaction type, 5003 RPM, 740° F, 440 PSI, Serial #1737.

LP TURBINE, Allis-Chalmers, Straight Reaction, Type, 4289 RPM, 740° F, 440 PSI, Serial #1738.

2 - TURBINE GENERATORS, Allis-Chalmers, Turbines: Impulse Condensing Type, 740° F, 440 PSI, 8000 RPM, Generators: 300 KW, 240 Volts DC, 2 wire, 1200 RPM.

CARGO WINCHES

2—Jaeger, 2 drum, 2 speed, 50 HP, 230 DC.
2—Parkersburg, 2 drum, 1 speed, 50 HP, 230 DC.

2—O.C.S., 2 drum, 1 speed 50 HP, 230 DC.
2—Vulcan, 1 drum, 2 speed, 50 HP, 230 DC.
2—American Hoist & Derrick, 1 speed, 1 drum, 50 HP, 230 DC.

SALT WATER EVAPORATOR, Davis, Size 36-17, rated 2500 lbs. per hour.

MAKE UP FEED EVAPORATOR, Davis, Size 26-8, rated 1500 lbs. per hour.

LAKESHORE TOPPING WINCHES, single speed, capacity 10,000 # at 67 FPM, 5 HP, 230 DC.

ANCHOR WINDLASS, Markey, Type CWA-4, horizontal, double wildcat—for 2 5/16" anchor chain, 70 HP, 230 DC.

MAIN CONDENSER, Allis-Chalmers, 7800 sq. ft. cooling service, 2 pass, horizontal.

LUBE OIL PURIFIER, Sharples, Type M-34-W-22U43, 350 GPH, 230 Volts DC Motors.

FUEL OIL STANDBY PUMP, Worthington, horizontal duplex, Size 5 1/2" x 3" x 6", 13 GPM, 410 PSI.

GENERAL SERVICE PUMP, Worthington, vertical simplex, Size 12 x 14 x 18, 600 GPM, 50 PSI.

FIRE & STANDBY PUMP, Worthington, vertical duplex, Size 12 x 8 1/2 x 12, 400 GPM, 150 PSI.

BOILER FEED PUMP, Worthington Auxiliary, vertical simplex, Size 11 x 7 x 24, 120 GPM, 550 PSI.

FRESH WATER PUMPS, 2—Worthington, Size 4x6, horizontal duplex, 100 GPM, 80 PSI, 7 1/2 HP, 230 DC.

BALLAST PUMP, Allis-Chalmers, Type SGV, Size 5 x 5, double suction, vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

SUBMERSIBLE BILGE PUMPS, 2—Worthington, 5", vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

BILGE PUMP, Allis-Chalmers, Size 5 x 5, Type SGV, double suction, vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

EVAPORATOR TUBE NEST DRAIN PUMPS, 2—Allis-Chalmers, Type SS-LH, horizontal, Size 2 1/2 x 2, 17 GPM, 127' head, 5 HP, 230 DC.

MAIN CONDENSATE PUMPS, 2—Allis-Chalmers, Type CF-2V, vertical volute, Size 6 x 3 1/2, 170 GPM, 208' head, 20 HP, 230 DC.

DISTILLER CONDENSATE PUMPS, 2—Allis-Chalmers, Type SS-L, horizontal centrifugal, Size 4 x 2, 45 GPM, 2 HP, 230 DC.

AUXILIARY CONDENSATE PUMPS, 2—Allis-Chalmers, Type CF-2V, vertical volute, Size 2 1/2 x 1 1/2, 30 GPM, 208' head, 7 1/2 HP, 230 DC.

DIESEL OIL PUMP, Viking, Type ZKK, gear type, Size 3 x 2 1/2, 40 GPM, 30 PSI, 2 HP, 230 DC.

DISTILLER FRESH WATER DISTRIBUTION PUMPS, 2—Allis-Chalmers, Type SS-DH, horizontal centrifugal, Size 2 1/2 x 2, 55 GPM, 51' head, 2 HP, 230 DC.

FIRE PUMPS, 2—Allis-Chalmers, Type B2-V, vertical centrifugal, Size 4 x 3, 400 GPM, 280' head, 50 HP, 230 DC.

MAIN FEED PUMP, Terry Turbine, Type ZS-1, 124 HP, with Ingersoll-Rand horizontal pump, Size 4 x 3 1/2, 4 stage, 250 GPM, 1340' head.

STEERING GEAR PUMP, Waterbury, Size 5, Type K, with Westinghouse Motor, 55 HP, 230 Volts DC.

LUBE OIL SERVICE PUMPS, 2—Quimby, vertical screw, Size 5, 400 GPM, 48 PSI, 6 x 5, 25 HP, 230 DC.

FUEL OIL TRANSFER PUMP, Quimby, vertical screw, Size 4D, 225 GPM, 50 PSI, 15 HP, 230 DC.

FUEL OIL SERVICE PUMP, Quimby, vertical screw, Size 2 1/2, 20 GPM, 400 PSI, 2 1/2 x 1 1/2, 10 HP, 230 DC.

ICE WATER CIRCULATING PUMP, Allis-Chalmers, Type SS-RH, 10 GPM, 81' head, 1" x 3/4", vertical volute, 1 HP, 230 DC.

HOT WATER CIRCULATING PUMP, Allis-Chalmers, Type SS-HH, 35 GPM, 70' head, 1 1/4 x 1 1/4, vertical volute, 2 HP, 230 DC.

REFRIGERATION CONDENSER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SJK, 180 GPM, 81' head, 2 1/2 x 2, horizontal volute, 7 1/2 HP, 230 DC.

MAIN CONDENSER CIRCULATING PUMP, Allis-Chalmers, Type LS-V, 12,550 GPM, 20' head, 20 x 20, vertical volute, 100 HP, 230 DC.

AUXILIARY DISTILLER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SG, 650 GPM, 29' head, 5 x 5, horizontal volute, 7 1/2 HP, 230 DC.

AUXILIARY CONDENSER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SE-V, 2820 GPM, 29.2' head, 12 x 12, vertical volute, 40 HP, 230 DC.

AIR COMPRESSOR, Ingersoll-Rand, Type 40, 2 stage, air cooled, 194 CFM, 110 PSI, 40 HP, 230 DC.

FORCED DRAFT BLOWERS, 2—American Blower, Sirocco capacity 17560 CFM, 5 1/2 SP, 75 HP, 230 DC.

COURSE RECORDER, Sperry, Mark 65091.

AUTOMATIC PILOT, Sperry, Mark 642840.

LIFEBOAT DAVITS, 2—sets, Welin, gravity trackway type, Size 135, capacity 21,500#.

AIR COMPRESSOR, Chicago Pneumatic, 161 CFM, 100 PSI, 2 stage, air cooled, Model PB2, 40 HP, 230 DC.

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FORGED STEEL LINE SHAFTING

Excellent buys on used—good shafting for re-machining to your requirements:

- 6—Sections 19" diameter, 23'—11" long, flanged
- 1—Section 19" diameter, 23'—8" long, flanged
- 3—Sections 19" diameter, 22'—10" long, flanged
- 12—Sections 19" diameter, 22'—6" long, flanged
- 6—Sections 14 1/8" diameter, 26'—6" long, flanged
- 2—Sections 14 1/8" diameter, 18'—6" long, flanged
- 2—Sections 14 1/8" diameter, 13'—9" long, flanged
- 39—Sections 13 1/2" diameter, 22'—0" long, flanged
- 15—Sections 13 1/2" diameter, 14'—0" long, flanged

1 Only, Model 17-DE-90

CLYDE WHIRLEY CRANE

LIFTING RATE: 25 tons at 50 foot radius at 50 to 60 FPM.

BOOM: 80' to headblock (with 10' whip)—
WHIP: 10 tons at 125 FPM—2 part line—
TRACK CENTERS: 20' — ENGINE: Cummins
HBIS 601, 180 HP supercharged, elec. start
—MOTORS: each leg (4 tot.) 7 1/2 HP, 230
DC—POWER: Diesel Electric (DC).

1 Only

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With specifications similar to Clyde 17-DE-90. Complete specifications and prices on request.

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Used, Davis Engineering or equal, with ABS and/or Coast Guard certification. 5 sizes available:

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- SIZE 36-17
- SIZE 36-14
- SIZE 26-8
- SIZE 20-5

PROMPT QUOTATIONS & DELIVERY

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MISCL. D.C. MOTORS

1—Westinghouse, 304 HP, 115 V, DC, 900 RPM, Sh. Wd., 2 pedestal bearings.
 3—Allis-Chalmers, 50 HP, 230 V, DC, 600 RPM, Comp'd Wd., Mod. MDS-11975.
 6—Westinghouse, 50 HP, 230 V, DC, 600 RPM, Comp'd Wd., Type CK, Fr. 9.
 4—Westinghouse, 9.3 HP, 230 V, DC, 640/852 RPM, Type SK, Fr. 93.
 20—Westinghouse, 7½ HP, 120 V, DC, 1750 RPM, Stab. Sh. Wd., Type SK, Fr. 43.
 Others in stock: 5 HP & up . . . 115 & 230 V.

230 VOLT D.C. MOTORS

1—250 HP, G.E., Type CY, Form HJ, Model 24G, 1200 RPM Horizontal, 2 B.B., Shunt Wd.
 2—220 HP, G.E., Type CDM-1348S, Form HA, Model 25G 339, 1800 RPM, Stab. Sh. Wd. Horizontal, 2 B.B.
 6—100 HP, Westinghouse, Type SK, FR. 163, Style 1B4631, 1150 RPM, Shunt Wd. Horizontal, 2 B.B.
 2—55 HP, Electro-Dynamic, FR 25-SL, 550 RPM, Compound Wound, Single Ball Bearing. Originally for high pressure Air Compressor.
 6—50 HP, Westinghouse, 600 RPM, Compd. Wd., Type CK, FR 9, Horizontal 2 B.B.
 1—40 HP, Allis-Chalmers, 1750 RPM, Compound Wound, Horizontal, 2 B.B.
 1—40 HP, G.E., Type CDM, FR 95, Model 35A1663, 1800 RPM, Compound Wound, Horizontal, 2 B.B.
 1—18/25 HP, Electro-Dynamic, 1225/1750 RPM, Compd. Wd., FR. 7½ S, Horizontal, 2 B.B.
 6—15 HP, Allis-Chalmers, 1225/1750 RPM, Stab. Sh. Wd., Type EB90, Horizontal, 2 B.B.
 2—10 HP, Allis-Chalmers, 1225/1750 RPM, Compd. Wd., Type EB80, Horizontal, 2 B.B.
 4—9.3 HP, Westinghouse, 640/852 RPM, Type SK, FR. 93.

120 VOLT D.C. MOTORS

1—304 HP, Westinghouse, 900 R.P.M., Shunt Wound, Horizontal, Pedestal Bearing.
 3—25 HP, G.E., Type CDM, 1200 R.P.M., Horizontal, 2 B.B., unused. Removed from M.G. Sets.
 20—7½ HP, Westinghouse Type SR, FR 43, Stab. Sh. Wd., 1750 RPM.

STEERING GEAR MOTORS

2—General Electric, 30 HP, 230 V, DC, 600 RPM, Stab. Sh. Wd., Type CDM, Fields Continuous Duty, Armature 1 Hr.
 1—Westinghouse, 35 HP, 230 V, DC, 850 RPM, Stab. Sh. Wd., Type SK, Fr. 123, Fields Continuous Duty, Armature 1 Hr.

SHIP'S LIGHTING M-G SETS

230 V, DC/115 V, DC. Ship's Lighting M.G. Sets for C3-S1-A-3 150 K.W. and Moore built C2 100 K.W.

SPECIAL D.C. GENERATORS

3—Unused, G.E., 15 KW, 100 A, 15 V, Type CDM, 1200 RPM, 2 B.B., D.P. Generators.

MOTOR-GENERATOR SETS Unused Surplus in Original Boxes



Janette M-G Sets. Input: 1.75 HP, 230 V, DC, 7.2 Amperes, 1800 RPM. Output: 1-KVA (.85 KW), 115/1/60, 4 ball bearing, with speed regulator, and with noise filters. Navy Type CJM-21151, continuous duty. Net weight 435 #, Dimensions 44" L, 19½" W, 18½" H. Instruction book and parts list included.

Many Radio, Radar & Electronic Equipment. Motor-Generator Sets. Let us have your inquiries.

D.C. MARINE CONTROLLERS

1—Cutler-Hammer, 250 HP, 230 V, DC, No. 232 793A14.
 2—General Electric, 225 HP, 230 V, DC, CR 5430-B32D.
 6—Westinghouse, 100 HP, 230 V, DC, Type 8585A SO-1B4636.
 1—Cutler-Hammer, Unused, 50 HP, 230 V, DC, No. C280981A290, Contactor Panel for Stern Anchor Haulage Winch. Many others from ¼ HP & up—115 and 230 V.

ROTOTROLS

15—Westinghouse Rototrols, driven by 5 HP, 440 V, 3 phase, 60 cycle, 1700 RPM, AC Motors.

D.C. TRANSFER PANEL

Cutler-Hammer, 3-pole, 300 A, 120/240 V, DC, Bul. 6007, No. B870102A2.

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For C-3-S1-A3 Auxiliaries . . . Send for List A-1. Many others—Let us have your inquiries.

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Westinghouse Propulsion Control Switchboards as used on S-4 Vessels. AC and DC Switchboards. Let us know of your requirements.

CIRCUIT BREAKERS

2 and 3 Pole Air Breakers, 2 and 3 Pole Molded Case Navy Type Breakers. 2 and 3 Pole Trip Elements for Molded Case Breakers.

Need 3 Wire 120/240 Volts DC for Shore Power? Motor-Generator Sets and Engine Driven Units from 15 KW to 500 KW . . . Let us quote.

D.C. GENERATORS

2—500 KW, 120/240 V, Westinghouse FR. CB813.7, 750 RPM, 2 Pedestal Bearing, with Balance Coils. Removed from GM 8-278 Engines.

2—250 KW, 120/240 V, Westinghouse, 1200 RPM, Single Pedestal Bearings. Balance Coils not available, Type 12S18P107PH, removed from Turbines.

2—150 KW, 120 V, G.E., Type CDM-1348-S, Form HA, Model 25G 340, 1800 RPM, Compound Wound, Horizontal 2 B.B.

1—150, 120 V, GE, Type CDM, Form AA, Model 24G, 1200 RPM, Compound Wound, Horizontal, 2 B.B.

6—100 KW, 120/240 V, Westinghouse, Type SK, FR. 143.8, 1800 RPM, Single Ball Bearings. Balance Coils available.

3—100 KW, 120/240 V, Delco, 1200 RPM, Single Bushed Bearings, with Balance Coils. Removed from Superior GDB-8 Engines.

1—100 KW, 120/240 V, Allis-Chalmers, 1200 RPM, Single Sleeve Bearing, Shunt Wound, Type 4-14-45-13, removed from GM 3-268A Engine.

10—90/165 KW, Westinghouse, 125/400 Volt, Type SK, FR. 185, Shunt Wound, separately excited (120 V), 1200 RPM, Horizontal, 2 B.B.

4—75 KW, 120 V, G.E., Type CDM-1234, Mod. 24GA71, 1200 RPM, 2 Ball Bearing, Tapered Shaft. Removed from Motor-Generator Sets.

6—60 KW, 120 V, Westinghouse, Type SK, FR 143, Style 3B2855-PH, 1800 RPM, 1 B.B. Removed from Turbines.

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A.C. TO D.C. M.G. SETS

From 250 Watts to 500 KW in 115 Volt, 230 Volt and 120/240 Volt, 3 Wire DC. Any drive including Synchronous Motor. Let us have your inquiries.

Reconditioned MOTOR GENERATOR SETS



MANY SMALLER UNITS IN STOCK

230 VOLTS D.C. TO A.C.

Hertner. Input: 230 V, DC, 24A. Output: 3.5 KVA, 440 V, 60 cy., 3Ø.
 Hertner. Input: 230 V, DC, 28A. Output: 5 KVA, PF .85, 115 V, 60 cy., Ø1.
 Continental. Input: 230 V, DC, 28A. Output: 7.5 KVA, 3.5 KW, 120 V, 1Ø, 60 cy., 62.5A.
 Century. Input: 10 HP, 230 V, DC. Output: 7.5 KVA, 3.75 KW, 120/1/60.
 Bogue. Input: 230 V, DC, 57A, 15 HP. Output: 10 KVA, PF .8, 120 V, 60 cy., 1Ø.
 Fidelity. Input: 15 HP, 230 V, DC. Output: 12.5 KVA, 10 KW, 120/1/60.
 Bogue Electric. Input: 15 HP, 230 V, DC. Output: 12.5 KVA, 10 KW, 120/1/60.
 Burke Electric. Input: 20 HP, 230 V, DC. Output: 25 KVA, 12.5 KW, 120/1/60.
 General Elec. Input: 25 HP, 230 V, DC. Output: 18.75 KVA, 15 KW, 120/1/60.
 Star Kimble. Input: 30 HP, 230 V, DC. Output: 25 KVA, 20 KW, 120/1/60.
 Ideal. Input: 40 HP, 230 V, DC. Output: 31.3 KVA, 25 KW, 450/3/60.
 Star Elec. Input: 40 HP, 230 V, DC. Output: 33.4 KVA, 25 KW, 450/3/60.
 General Elec. Input: 230 V, DC, 40 HP. Output: 25 KW, 480 V, 60 cy, 3Ø, 24A, 1800 RPM.
 Star Elec. Input: 125 HP, 240 V, DC. Output: 93.75 KVA, 75 KW, 450/3/60.

115 VOLTS D.C. TO A.C.

Marathon. Input: 1 HP, 115 V, DC. Output: .500 KVA, .425 KW, 115/1/60.
 Bludworth. Input: .75 HP, 115 V, DC. Output: .500 KVA, .450 KW, 115/1/60.
 Elec. Spec. Input: 1 HP, 90/130 V, DC. Output: .500 KVA, .500 KW, 115/1/60.
 Century. Input: 1.5 HP, 115 V, DC. Output: .750 KVA, .600 KW, 102/1/60.
 Janette. Input: 13 Amp, 115 V, DC. Output: 1 KVA, 110/1/60.
 Elect. Prod. Input: 1.5 HP, 115 V, DC. Output: 1 KVA, 115/1/60.
 Allis-Chalmers. Input: 14 Amp, 115 V, DC. Output: 1.250 KVA, 1 KW, 115/1/60.
 Cont. Elect. Input: 6 HP, 115 V, DC. Output: 2.9 KW, 440/3/60.
 Louis Allis. Input: 10 HP, 105/130 V, DC. Output: 7.5 KVA, 440/3/60.
 Cont. Elect. Input: 12 HP, 120 V, DC. Output: 7.5 KVA, 440/3/60.
 Star Elect. Input: 12½ HP, 115 V, DC, 1800 RPM. Output: 7½ KW, 120 V, 60 Cy.
 Ideal. Input: 40 HP, 115 V, DC. Output: 31.3 KVA, 25 KW, 450/3/60.
 Continental. Input: 50 HP, 115 V, DC. Output: 50 KVA, 25 KW, 120/3/60.
 Burke. Input: 20 HP, 115 V, DC. Output: 25 KVA, 12½ KW, 120/1/60.
 RCA. Input: 4 HP, 105/130 V, DC. Output: 2.22 KVA, 2 KW, 120/1/60.

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Tremendous stock of electrical equipment at the "right" prices . . . for prompt service or further details phone or write H. S. "Mac" McIntosh at 503/228-8691 . . . you'll be glad you did!

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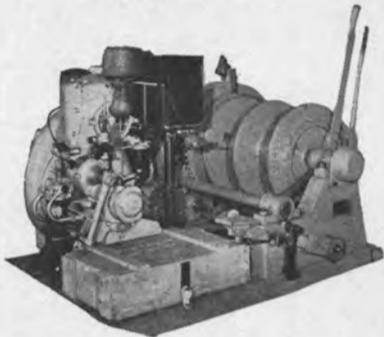
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**NEW
2500 LB
DIESEL
WINCHES**



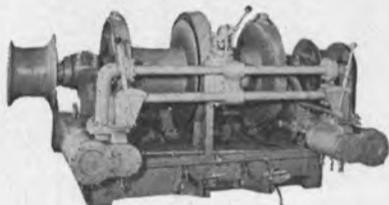
Small general purpose winches, mfg by Jaeger. Rated 2500 lbs @ 75 FPM. Driven by air-cooled Enfield single Cylinder diesel engine. Deutchable free spooling drum has center flange which can be removed if required. Excellent for small vessel use and general purpose service on all vessels. Has spare parts box. Weight about 1500 lbs.

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**CLYDE DOUBLE DRUM
WINCHES**



Drum 8500 lbs @ not less than 120 FPM; 13,000 lbs at no specified speed. Gypsy head 22,500 lbs. static pull. Foot brake to hold 17,000 lb. pull. Steam cylinders with standard 250 PSI.

DIMENSIONS:

9' 5 3/4" wide over winch heads
5' 10 1/2" wide on bedplate
4' 1" deep over bedplate
6' 5" overall—brake pedal, etc.
2" steam—2 1/2" exhaust.

Drums 16" diameter—20" wide—33 13/16" over flanges. Rebuilt by U.S.N. equal to new.

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**NEW — UNUSED
ROSS COOLERS
FOR LUBE OIL SERVICE**



Screw connections — copper jacket — cupro-nickle tubes. 8" diameter x 6'3" length—84 sq. ft. surface. Water inlet 3"—outlet 3". Oil inlet 2 1/2". Two Pass. Complete with zinc plugs.

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BARGE MOUNTED REVOLVING CRANE 50-Ton capacity, Barge dimensions: 57' wide x 190' long.
CRANES-WHIRLEYS: One American 1956 model R20 HHE heavy duty 50 Ton. One practically new American model 254 capacity 90 Tons at 50', 25 Tons at 140'. One Clyde model 24E 50 Tons at 45'.
CONTINUOUS LIBERTY SHIP DISMANTLING—Marine parts always available.
STEEL BARGES AVAILABLE IMMEDIATELY—180'x42'x 12' and 150'x42'x12'—A.B.S. Newly Constructed. OTHER SIZES ALSO AVAILABLE.

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**INGERSOLL-RAND
PUMPS**

From Ex-Naval Vessels



FIRE & FLUSHING PUMP

200 GPM—total head 224'—discharge pressure 100 PSI—3 1/2" suction—3" discharge—3500 RPM—bronze construction—flanged. MOTOR: 20 HP—440/3/60/3600 RPM—G.E. type K.F.—frame 326—full load amps 28—fan cooled—ambient 50°C—class B insulation—totally enclosed—Navy Service A. DIMENSIONS: OAL 37 1/4"—OAW 18 31/32"—OAH 18 1/2"—total weight 1225 lbs. Reconditioned.

\$397⁵⁰



FIRE & BILGE PUMP

Self-Priming

200 GPM—bronze—224' head—90/100 lbs fire service—suction lift 23'—3500 RPM. MOTOR: 20 HP—440/3/60/3500 RPM—28 amps—G.E. type KF—frame 326—class B—totally enclosed—Navy Service A—3 1/2" suction—3" discharge. PRIMER MOTOR: 1 1/2 HP—440/3/60/3600 RPM—fan cooled—totally enclosed—2.2 amps. Nash priming pump complete with priming valve. Reconditioned.

\$497⁵⁰

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**VERTICAL
BOILER**

Suitable for
**Pile Drivers
Steam Cranes
Hoists**
etc.



100 HP @ 100 PSI. Water heating surface 747 sq. ft.—total heating surface 1144 sq. ft. A.S.M.E. Built by International Boiler Works—East Stroudsburg, Pa.—Height to top of cylinder 12'0"—Diameter 66"—4" main steam line—two 1 1/2" safety valves—practically new—very little if any use. Oil burning.

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WINDLASS**



Made by Ideal Electric Co.—with spares. Double wildcat—1-5/16"—15 HP—115 volts DC—1750 RPM—all controls—two outboard gypsies. Wildcats 36" between centers—6000 lb line pull @ 50 FPM. DIMENSIONS: O.A. width over gypsies—84"; OA length 81". Will sell windlass without power if desired.

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**NEW BERGER
Self-Aligning
MARINE FAIRLEADS**

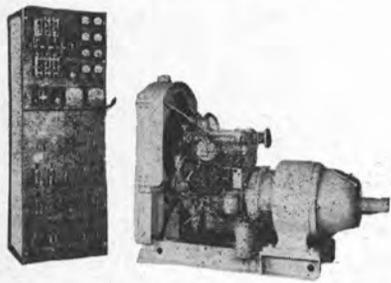


Model 623—for 1 3/4" wire. 23" Sheave—shank opening 9 1/2"—4500 lbs.—BASE: 37" long—50" wide—throat 11".

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**15 KW DIESEL
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Hercules DOCC 4" X 4 1/2" diesel engine. Generator: Fidelity Electric — LCD3 — 15 KW — 120/240 Volts DC—62.5 amps. With switchboard and automatic transfer switch. From C2-S-AJ2—North Carolina built. Good operating condition.

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NEW SURPLUS BARGAIN**



Heavy Duty, 8 volts, 500 amps, 13 3/4" Wide, 27 1/4" long, 18" high. Weight in case, 488 lbs.

AL EPSTEIN, INC.

Most Anything in Marine Supplies
JA 5-5526 or JA 2-5141 — P.O. Box 51569
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AXIAL FLOW FANS



**NEW
UNUSED
230 V. D.C.**

Navy size A10D2W6—LaDel Co., 10,000 CFM @ 3" S.P. MOTOR: Reliance Motor Co.—7.5/3.1 HP, 230 VDC—1310/1750 RPM. DIMENSIONS: 32 1/2" OD—31 1/4" BC—29 1/4" ID—40 3/4" length.

\$45000

Navy size A8D2W5—Buffalo Forge Co.—8000 CFM @ 3" S.P. MOTOR: G.E. 6/1.8 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 30 9/16" OD—29 1/4" BC—27 1/4" ID—37 3/4" length.

\$32950

AF80—Sirocco—8000 CFM @ 2" S.P. MOTOR: Welco 4/1.9 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 30 1/2" OD—29 1/4" BC—27 1/4" ID—37 3/4" length. U.S. Maritime type fan.

\$32950

AF100—Sirocco—10,000 CFM @ 2" S.P. MOTOR: Welco 5/2.2 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 32 1/2" OD—31 1/4" BC—29 1/4" ID—40 3/4" length. U.S. Maritime type fan.

\$37500



NEW — UNUSED — 115 V.D.C.

20000 C.F.M. — 115	10000 C.F.M. — 115
16000 C.F.M. — 115	5000 C.F.M. — 115
12000 C.F.M. — 115	4000 C.F.M. — 115

(explosion-proof)

RECONDITIONED — 440 V.A.C.

A1A4W5 to A16A4W5—with starter—440/3/60
1000 C.F.M. — 6000 C.F.M.
2000 C.F.M. — 8000 C.F.M.
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**DUPLEX
STRAINERS**
in good condition

4"	\$349.00
22" x 3" between mounting holes	
2"	\$249.00
15" x 3" between mounting holes	

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DIESEL PROPULSION UNITS



**MURRAY & TREGURTHA
HARBORMASTER**

3 Model 0-7 units in stock. Powered by twin GM 6-71 diesels with hydraulic clutch & electric steering. Propeller diam. 64" pitch 48". Tailfin raised & lowered mechanically. 7' from bottom of unit to propeller hub center. Weight about 20,000 lbs. Propeller speed 308 RPM. Unit can develop up to 500 HP. Formerly used on Cargill Grain Co. barge "Carpolis". Actual photo on request. Can be demonstrated running in shop.

1—0-6 Series — Single engine — GM 6-71. Hydraulic controls—electric steering. PROPELLER: Maximum RPM 308—64" diameter—48" pitch. Deck to centerline of propeller 7 1/2'.

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10 H.P.
REVERSING CAPSTANS**

Shipboard Use
Duty 10,000 lbs @ 60 FPM



MOTOR: 10 HP—totally enclosed—fan cooled—continuous duty—horizontal flange mounted—special shaft & oil seal fitted—440/3/60—1760 RPM. CONTROL: Marine type water-tight push-button—forward/reverse/stop—watertight starter box—rated for 40 starts per hour—triple pole contactor with silver contacts, thermal overload relay and trip adjustment. DIMENSIONS: Barrel 10" diameter—Flange 10" diameter—approx. 26" wide and 36" long.

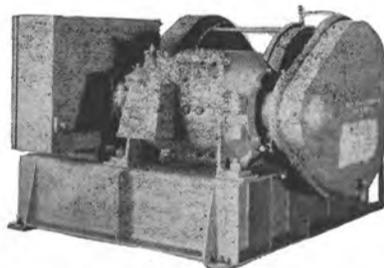
**6 IN STOCK FOR
IMMEDIATE DELIVERY**

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American Hoist & Derrick—single speed—single drum—all steel cargo winches. 7250 lbs @ 220 FPM based on first layer of 3/4" rope. Drum 18" diameter—20" wire. G. E. Motor—50 HP—230 volts—600 RPM. Excellent condition. Priced with controls.

ALL REBUILT BY USMC

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TRANSFORMERS



15 KVA—3 per bank—450 V primary—117 volt secondary.

\$190.00 PER BANK

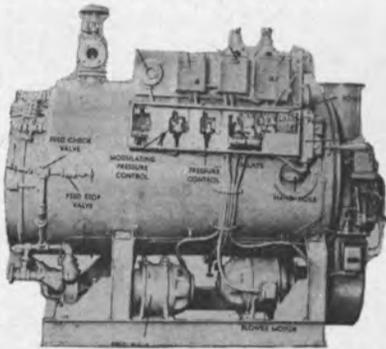
Also inquire about other sizes: 10 KVA/20 KVA/25 KVA/37 KVA

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ALL TYPES—ALL VESSELS
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GENERAL ENGINEERING WORKS
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**SELF-CONTAINED MC-90
CYCLOTHERM
STEAM GENERATOR**



OUTPUT 2600 lbs./hour—design pressure 125 PSI—working pressure 100 PSI—2-pass—1-burner—pressure atomizing. Burner capacity 26 gallons per hour—fuel pressure at nozzle 200 PSI—fuel pump capacity 75 gallons per hour against 200 PSI. BLOWER MOTOR 5 HP—440/3/60—3400 RPM. FEED PUMP MOTOR 3 HP—440/3/60—1725 RPM. FUEL PUMP MOTOR 1/2 HP—220 volts single phase—1725 RPM. FEED PUMP CAPACITY 10 GPM @ 300' head. IGNITION electric—transformer primary 200 volts—secondary 10,000 volts. BURNER pressure atomizing type. Shell plate 5/16" thick—heads 1/2" thick—furnace 16" OD x 3/8" thick. Return tubes: 22 @ 2 1/2" x 0.110 wall and 22 @ 2" x 0.095 wall. Boiler shell hydro-tested 188 lbs./inch. Hand holes 3 1/2" x 4 1/2". Fusible plug—one in rear.

**THESE BOILERS ARE ALL
EQUIPPED PACKAGE UNITS**

The boiler is mounted on a rugged structural base—easily bolted down. Boiler heating surface so arranged to provide rapid circulation of surrounding water. DIMENSIONS: 8' OAL—8' OAH over safety valves—43" OAW. Dry weight 5035 lbs. Flue outlet 10" ID. Control cabinet mounted on top of boiler. Boilers carefully removed from Naval vessels. You have to see them to appreciate them.

READY TO OPERATE **\$3950**

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
LExington 9-1900 (301) ELgin 5-5050

**NEW-UNUSED LIBERTY SHIP
Troy-Enberg 20 KW Generators**



WHILE THEY LAST
\$695 CLOSE
OUT PRICE
Factory Packages

120 volts DC—400 RPM—drip-proof marine type. 2-Wire direct connected set. Reciprocating 6 x 7 type E vertical self-oiling steam engine—plug & piston valve—220 lbs PSI—80 lbs. BP.

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

FACTORY-NEW
200 AMP WELDERS



Motor: 10 HP—230 volts DC—2800 RPM. 200 amps max. continuous welding. Range regulation 15/200 amps. Dimensions: 38" X 30" X 20". Weight: 514 lbs. Shipping case—48" X 35" X 25". Complete with 100 ft. welding cable—ground clamp & electrode holder. Built to Lloyd's—Register BS 638—1954.

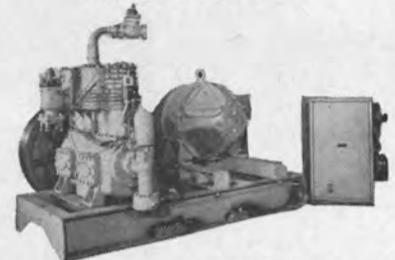
\$1175 EACH

ASK FOR FLEET PRICE

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

CARRIER REFRIGERATION UNITS
40-Ton Air Conditioning & Cargo
Refrigeration Units



Carrier compressor—model 7G8-EF—freon compressor with manual cylinder cut-out—426 RPM—39.4 tons—suction temp. 45°F—cond. temp.—105°F—35 HP—230 volt DC motor. Complete with motor control—refrigeration condenser—receiver—fittings. 8 Complete units. Dimensions: Compressor 6'8 1/2" long—4' 10 1/2" OAW—approx. 6' high over suction connection. Condenser about 14' long—approx. 12" diameter. Just removed from Grace Line vessels. Excellent for fishing industry, banana boats, air-conditioning quarters, etc.

THE BOSTON METALS COMPANY

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539-1900 (301) 355-5050

M.G. SETS



NEW JANETTE 1 KVA SETS

2-Bearing Sets—type D.E.—3L. MOTOR INPUT: 2 HP—115 volts DC—3.5 amps—1800 RPM. OUTPUT: type C.E.I.—120 volts 60 cycle single phase. 8.3 amps—40°C Temp rise—0.8 P.F.

\$17950



1.24 KW G.E. MG SETS

G.E. Motor—3 HP—115 volts DC—1800 RPM. OUTPUT: G.E. generator—1.24 KW—1.56 KVA—120/60/1—0.8 PF—14.2 amps—1800 RPM. With spare armature. Overspeed trip on motor side.

\$33950



25 KW IDEAL M.G. SETS

INPUT: 40 HP—115 volts DC—290 amps—1800 RPM—frame 445. OUTPUT: Generator 31.5 KVA—25KW—440/3/60—1800 RPM. Control cabinet includes motor starter & generator control.

THE BOSTON METALS COMPANY

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539-1900 (301) 355-5050

NEW YORK OFFICE: 11 Broadway — New York, N. Y. 10004

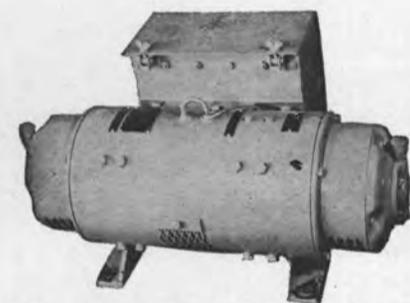
PHONE: 943-2640



UNUSED SURPLUS 1 KVA SETS

INPUT: 1.75 HP—115 Volts DC—17 amps—1800 RPM. OUTPUT: 1 KVA—115 volts—8.7 amps—60 cycle single phase—0.9 PF. Unit is self-excited and will carry load immediately on starting. Regulation ±5%. Complete with magnetic starter & spare parts. Units designed and built to rigid Navy specs. SIZE: 19.5" long—26.5" wide—16" high. Weight 285 lbs. SPARES: 85 lbs. CONTROL: 20"X15"X10"—75 lbs.

\$18950



NEW 0.5 KVA HERTNER SETS

Type CHT-211761. INPUT: Motor 115 volts DC—9.0 amps—1800 RPM—1 HP. OUTPUT: 0.5 KVA—115 volts single phase 60 cycle—4.3 amps—.85 PF.

\$12750

CONTINENTAL: 3.7 KW—Input: 7 1/2 HP 230 volts DC/28 amps/1800 RPM. Type D-324X—continuous. Output: Generator type DS-324XB 3.7 KW/7.5 KVA/120/1/60—62.5 amps—0.5 PF compound wound.

New Watertight Doors

FOR IMMEDIATE DELIVERY



6 Dog right and left hand hinged steel doors—with frames. Built and tested to A.B.S. specifications.

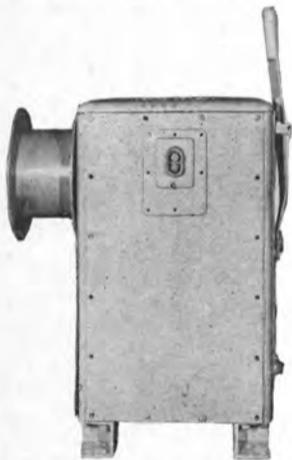
SIZES:

26" x 48"
26" x 57"
26" x 60"
26" x 66"
30" x 60"

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
LExington 9-1900 ELgin 5-5050

OCEANOGRAPHIC TYPE WINCH



Designed for use with Bathythermograph—Submarine Signal Co.—type E/2/S—without cables—single speed 300 lb. pull @ 360 FPM—single drum 9" X 6 3/4"—with 1 7/8" flanges—clutch controlled with pawl & ratchet. Designed for use with 1200 ft. of 1/8" stainless cable. Motor: 3 HP—440/3/60—1700 RPM—intermittent. 5 Available—Navy surplus—show little use.

\$349⁵⁰ EACH

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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LESLIE PUMP GOVERNOR VALVE



New—in original crates. For U.S. Naval Vessels—type CT-HNS-3. For merchant vessels—type CTHS. Size 2". Typical serial 241-423. For immediate delivery.

\$495

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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14" & 16"
ALL-BRONZE
PORTLIGHTS

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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LARGE AXIAL FANS

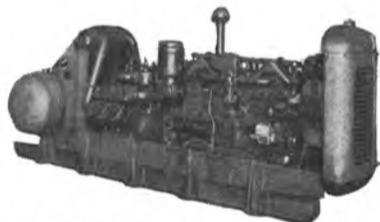
30000 C.F.M.

A30A4W5—25 HP—440/3/60. 30000 CFM @ 3" static; 40000 CFM @ 1" static. I.D. 44 1/4"

THE BOSTON METALS COMPANY

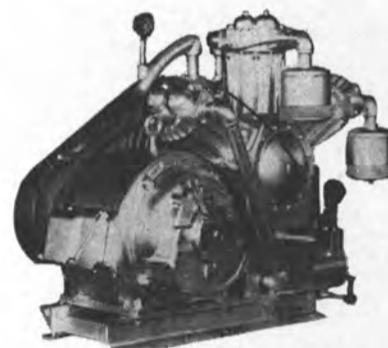
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685-1900 (301) 355-5050

SHIPBOARD AIR COMPRESSORS



DIESEL-DRIVEN INGERSOLL RAND

Ingersoll-Rand compressor—315 cu. ft. at 125 lbs.—driven by International Harvester UD-18 diesel. Tank mounted on skid—radiator cooled—from Corps of Engineers salvage vessel.



SHIPS SERVICE

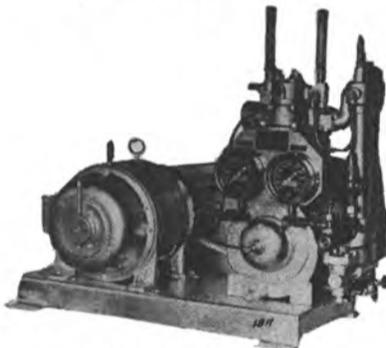
Ingersoll-Rand—type 30—class R—5x5x4x4—50 CFM @ 150 lbs. 20 HP 440/3/60 motor & controls—1750 RPM—50°C—class A. Complete with centrifugal unloader. OAL 4' 1 1/4"—OAH 3' 2 1/2"—OAW 2' 6 1/2"—total weight 1505 lbs.

\$1250

T2 TANKER SHIPS SERVICE

Worthington—5 1/2 x 3 1/2 x 3 1/2—VA2—20 CFM @ 100 lbs. Motor 5 HP—440/3/60—1750 RPM—marine type ball-bearing drip-proof—fan cooled—with magnetic starter & self-unloader. OAL 4' 8 1/2"—OAH 28"—OAW 25 5".

\$695



DIESEL STARTING

Ingersoll-Rand type 30—class T—4 x 1 1/2 x 3 1/2—10 CFM at 600 lbs.—7.5 HP—motor is 440/3/60—1750 RPM—class A—50°C—weight 700 lbs. Complete with inter- and after cooler. OAL 3' 6"—OAH 4' 1 1/2"—OAW 2' 2 3/4".

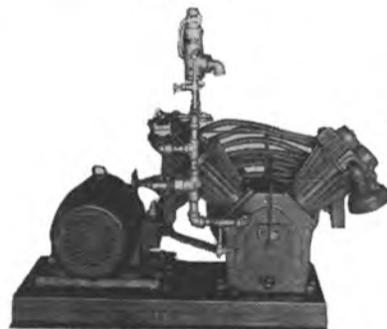
\$1750



T2 TANKER COMBUSTION CONTROL

Ingersoll-Rand type 30—5x5 & 4x4—54.4 CFM @ 100 lbs. Motor 15 HP—440/3/60—1750 RPM—with magnetic control, self-unloader, etc. Weight complete 1122 lbs. OAL 4' 11 1/4"—OAH 2' 10"—OAW 2' 7 3/4".

\$995



T2 TANKER SHIPS SERVICE

Ingersoll-Rand type 30—model 253x5—5x3x3 1/2—20 CFM @ 100 lbs—self unloader. Westinghouse 5 HP 440/3/60 motor.

\$695

T2 TANKER COMBUSTION CONTROL

Worthington 6 1/2 x 3 1/2 x 4—VA2—52 CFM @ 100 lbs. Motor is 15 HP—440/3/60—1750 RPM. Complete with magnetic starter, self-unloader, etc.

\$995

THE BOSTON METALS COMPANY

313 E. Baltimore St.
539-1900

(Area Code 301)

Baltimore, Md. 21202
355-5050

NEW 7" RADIUS PANAMA CHOCKS

(Meet Panama Regulations)

With Extended Legs For Welding To Deck



Clear opening 10" x 14" — 7" radius — with extended legs for welding to deck. Use as double or single bow chock. OAL 28" on base — OAW 14" — OAH 27 3/4" — Cast Steel.

IMMEDIATE DELIVERY FROM STOCK



NEW

UNIVERSAL CHOCKS

6 Rollers—2 horizontal and 4 vertical. For fairleads in all directions—inboard and outboard. Strong construction—easy to maintain. Fulfills all requirements of St. Lawrence Seaway, etc. Excellent for container chips. 5 1/2" Rollers for vessels up to 20,000 tons. For vessels from 20,000 to 150,000 tons, series L with 7 5/8" rollers. OAH 30"—OAL 30"—OAW 17".



BULWARK-MOUNTED CHOCKS

for curved or flat plate

7" RADIUS—14" x 10" opening

THE BOSTON METALS COMPANY

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DiMattina Supply Co., 59-61 Seabring St., Brooklyn, N.Y. 11231

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Foster Wheeler Corp., 666 Fifth Ave., New York, N.Y. 10019

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Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y. 10019
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The West Indies Oil Co., Ltd., St. John's Antigua, W. I.

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Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y.

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Eureka Chemical Co., 234 Lawrence Ave., South San Francisco, Calif. 94080
USS Chemicals (Div. of U. S. Steel), P. O. Box 86, Pittsburgh, Pa.

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Lighter Aboard Ship, Inc., 225 Baronne St., New Orleans, La. 70112
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
RPC Corp., Marine Sales, 200 Park Ave., New York, N.Y. 10017
Star Iron & Steel Co., 336 Alexander Ave., Tacoma, Wash. 98421

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Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231

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Western Gear Corp., Heavy Machinery Div., Everett, Wash. 98201

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Metropolitan Floor Covering, Inc., Div. of Drehmann Paving & Flooring Co. 2101 Byberry Rd., Philadelphia, Pa. 19116

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Kiene Diesel Accessories, Inc., P.O. Box 216, Franklin Park, Ill. 60131

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Fiat, Turin, Italy, U.S.A. 375 Park Ave., New York, N.Y. 10022
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
H. O. Penn Machinery Co., Inc., Caterpillar dir., 140th St. & East River, New York, N.Y. 10454
Stewart & Stevenson Services, Inc., 4516 Harrisburg Blvd., Houston, Texas 77011
Stork Dieselmotoren, Kromhout Motoren, P.O. Box 4196, Amsterdam, Holland.

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Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
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General Electric Co., Schenectady, N.Y. 12305
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
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Sanders & Thomas, Inc., 1st-Federal Bldg., Pottstown, Pa. 19464
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
George Slifer, 1422 Lakewood Rd., Jacksonville, Fla. 32207
Philip F. Spaulding & Associates, 65 Marion St., Seattle, Wash. 98104
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wis. 54235
Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201
H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006
Transcaribbean Shipping & Trading Corp., Panam Docks, Isle Grande, P.O. Box 564, San Juan, P.R. 00902
H. Newton Whittelsey, Inc., 17 Battery Pl., New York, N.Y. 10004

OIL & POLLUTANT DISPOSAL

Spentonbush Fuel Transport Service, 500 Fifth Ave., N.Y. 10036
OIL PURIFIERS—Repair
 Norse Electric Mfg. Co., Inc., 57-59 Commerce St., Bklyn, N.Y. 11230
OILS—Marine—Additives
 Esso International Inc., Esso Bldg., 15 West 51 St., New York, N.Y.
 Gulf Oil Trading Co., 1290 Ave. of the Americas, New York, N.Y.
 Mobil Oil Co., Inc., 26 Broadway, New York, N.Y. 10004
 Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
 Shell Oil Co., 50 W. 50 St., New York 10020
 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

PAINT—Marine—Protective Coatings

Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
 Devae & Reynolds Co., Inc., Marine Division, Newark, N.J. 07105
 Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
 International Paint Co., 21 West St., New York, N.Y. 10006
 Mobil Chemical Company, Metuchen, N.J. 08840

PETROLEUM SUPPLIES

Independent Petroleum Supply Co., 277 Park Ave., New York 10017
 Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
 Shell Oil Co., W. 50 St., New York 10020
 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
 The West Indies Oil Co., Ltd. St. John's, Antigua, W. I.

PLASTICS—Marine Applications

Atlas Minerals & Chemical Div., ESB, Inc., Mertztown, Pa. 19539
 Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
 Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

POLLUTION CONTROL

Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
 Tretolite Div., Petrolite Corp., 369 Marshall Ave., St. Louis, Mo. 63119.

PROPELLERS—New and Reconditioned

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
 Baldwin-Lima-Hamilton Corp., Phila., Pa. 19142
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
 Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
 Escher Wyss, G.M.B.H., 798 Ravensburg, Germany

PUMPS

Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
 De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602

RATCHETS

American Forge & Mfg. Co., McKees Rocks, Pa. 15136
 W. W. Patterson Co., 830 Broket St., Pittsburgh, Pa. 15233

REFRIGERATION—Refrigerant Valves

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
 Frigitemp Corp., 329 Herzl St., Brooklyn, N.Y. 11212
 Thermo King Corp., 314 W. 90 Street, Minneapolis, Minn. 55420
 York Corp., Grantley Road, York, Pa. 17405

ROPE—Manila—Nylon—Hawsers—Wire

American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
 Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
 Columbian Rope Co., Auburn, N.Y. 13022
 Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
 Plymouth Cordage Company, Plymouth, Mass. 02364
 Tubbs Cordage Company, 200 Bush St., San Francisco, Calif.
 Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER PRODUCTS—Dock Fenders, Hose, Life Preservers

Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

RUDDER ANGLE INDICATORS

Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

SEALS

Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
 Syntrol, a division of FMC Corp., 398 Lexington Ave., Homer City, Pa. 15748

SEARCHLIGHTS

Portable Light Co., Inc., 67 Passaic Ave., Kearny, N.J. 07032
 Snelson Oilfield Lighting Co., 1201 E. Daggett St., Forth Worth, Texas 76104

SEWAGE DISPOSAL

Youngstown Welding & Engineering Co., 3708 Oakwood Ave., Youngstown, Ohio 44509

SHIPBREAKING—Salvage

The Boston Metals Co., 313 E. Baltimore, Md. 21202
 National Metal & Steel Corp., 1251 New Dock St., Terminal Island, Cal. 90731
 Northern Metal Co., Minor & Bleigh Sts., Philadelphia, Pa. 19136
 Peck Equipment Co., 3500 Elm Ave., Portsmouth, Va. 23704
 Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIP BROKERS

Gulf Coast Marine, Inc., P.O. Box 52987, Houston, Texas 77052
 Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
 Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
 Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

SHIPBUILDING—Repairs, Maintenance, Drydocking

Albina Engine & Machine Works, 2100 N. Albina Ave., Portland, Ore. 97227
 Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Astilleros de Codiz, S.A., Zurhono 72, Madrid 10, Spain
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
 Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C. 28560
 Bender Ship Repair, Inc., 265 So. Water St., Mobile, Ala. 36602
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
 Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
 Brewer Dry Dock Co., Mariners Harbor, Staten Island, N.Y.
 Ira S. Bushey & Sons, Inc., 764 Court St., Brooklyn, N.Y. 11231
 Conrad Industries, P.O. Box 790, Morgan City, La. 70380
 Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
 Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
 Equitable Equipment Co., Inc., 410 Camp St., New Orleans, La. 70130
 Furness-Smiths Dock (Trinidad) Ltd., P.O. Box 893, Chaguaramas Dockyard, Port Chaguaramas, Trinidad, West Indies.
 Gotaverken American Corp., 39 Broadway, New York 6, N.Y.
 Halifax Shipyards, Ltd., P.O. Box 640, Halifax, Nova Scotia, Canada
 Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
 Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
 Hitachi Shipbuilding Co., 25 Nakanoshima 2-chome Kitaku, Osaka-Japan
 Ishikawajima-Harima Heavy Industries Co., Ltd., 50 Broad Street New York, N.Y. 10004
 Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla.
 Jeffboat, Inc., Jeffersonville, Ind. 47130
 Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan
 LISNAVE, P.O. Box 2138, Lisbon, Portugal
 Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
 Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
 Lone Star Marine Salvage Co., 7200 S. Harbor Drive, Houston, Texas 77001
 Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
 Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan
 Nashville Bridge Co., P.O. Box 239, Nashville 1, Tenn.
 National Steel & Shipbuilding Corp., San Diego 12, Cal.
 Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
 Nippon Kokan Kabushiki Kaisha, 2, 1-chome, Otemachi, Chiyoda-ku, Tokyo, Japan
 O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
 Pacific Coast Engineering Co., P.O. Drawer 6, Alameda, Calif. 94506
 Pearson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
 Perth Amboy Dry Dock Co., Perth Amboy, N.J.
 Puerto Rico Drydock and Marine Terminals, Inc., P.O. Box 2209, San Juan, Puerto Rico 00903
 Rodermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
 St. Louis Shipbuilding—Federal Barge, Inc.
 611 East Morecou, St. Louis 11, Mo.

Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
 Tampa Ship Repair & Dry Dock Co., Inc., P.O. Box 1277, Tampa, Florida 33601
 Terrin Agency, Inc., 17 Battery Place, New York, N.Y. 10004
 Todd Shipyards Corp., 1 Broadway, New York City
 Vore Corp., Equipment Systems Div., 516 Sylvan Ave., Englewood Cliffs, N.J. 07632
 Vickers Ltd., 222 London Rd., St. Albans, Herts, England
 Wiley Mfg. Co., Port Deposit, Md.
 Wyatt Industries Inc., Port Houston Shipyard Div., P.O. Box 3052, Houston, Texas 77001

SHIP MODELS

Boucher-Lewis Precision Models, Inc., 36 E. 12 St., N.Y., N.Y. 10003

SHIP STABILIZERS

Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, New York, N.Y. 10007
 John J. McMullen Associates, Inc., 17 Battery Pl., N.Y., N.Y. 10004
 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

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 Luckenbach Steamship Co., 120 Wall St., New York 5, N.Y.

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SYNTHETICS

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Fruehauf Trailer Div., Fruehauf Corp., 10940 Harper Ave., Detroit, Mich. 48232

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 Curtis Bay Towing Co., Mercantile Bldg., Baltimore 2, Md.
 G & H Towing Company, 509 Texas Building, Galveston, Texas 77550
 Henry Gillen's Sons Lighterage, 140 Cedar St., New York, N.Y. 10006
 James Hughes, Inc., 17 Battery Pl., New York, N.Y.
 Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
 McAllister Bros., Inc., 17 Battery Pl., New York, N.Y.
 McDonough Marine Service, P.O. Box 26206, New Orleans, La.
 P. F. Martin, Inc., Mall Bldg., 325 Chestnut St., Philadelphia, Pa.
 Moran Towing & Transportation Co., Inc., 17 Battery Place, N.Y.
 Nickerson Marine Towing Co., 1670 Southeast 17th Street, Ft. Lauderdale, Fla. 33316
 Red Star Towing & Transportation Co., 500 Fifth Ave., N.Y. 10036
 L. Smit & Co., 11 Broadway, New York 4, N.Y.
 Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
 M. & J. Tracy, Inc., 1 Broadway, New York, N.Y.
 Turecama Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y.
 Vancouver Tug Boat Co., Ltd., 10 Pemberton Ave., No. Vancouver, B.C., Canada

VALVES AND FITTINGS—Hydraulic—Safety Flanges

Hooper Valve & Engineering Corp., 24th St. & Virginia Ave., Newport News, Va.
 Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn 31, N.Y.
 Hydresearch Co., Inc., Riva Rd., Annapolis, Md. 21401
 Keratone Mfg. Corp., 2516 Liberty Ave., Pittsburgh, Pa. 15222
 Marine Moisture Control Co., 39 Redfern Ave., Inwood 96, L.I., N.Y.
 Mechanical Marine Company, 45-15 37th St., Long Island City, N.Y.
 Todd Products, Div. of Todd Shipyards Corp., Halleck St., Brooklyn, N.Y. 11231

VAN CONTAINERS—Insulated, Refrigerated, General Commodity
 Fruehauf Trailer Div., Fruehauf Corp., 10940 Harper Ave., Detroit 32, Mich.

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Weather Routing, Inc., 90 Broad St., New York 4, N.Y.

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 Bethlehem Steel Corp., Bethlehem, Pa. 18018
 DiMattina Supply Co., 59-61 Seabring St., Brooklyn, N.Y. 11231
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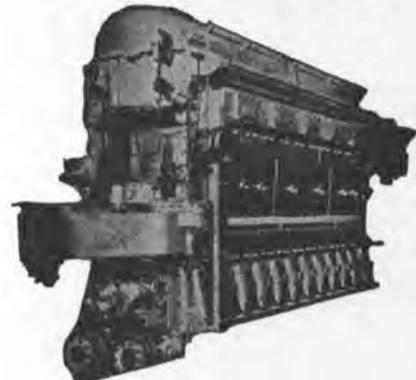


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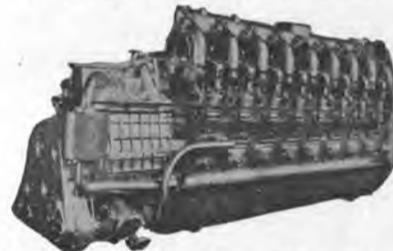
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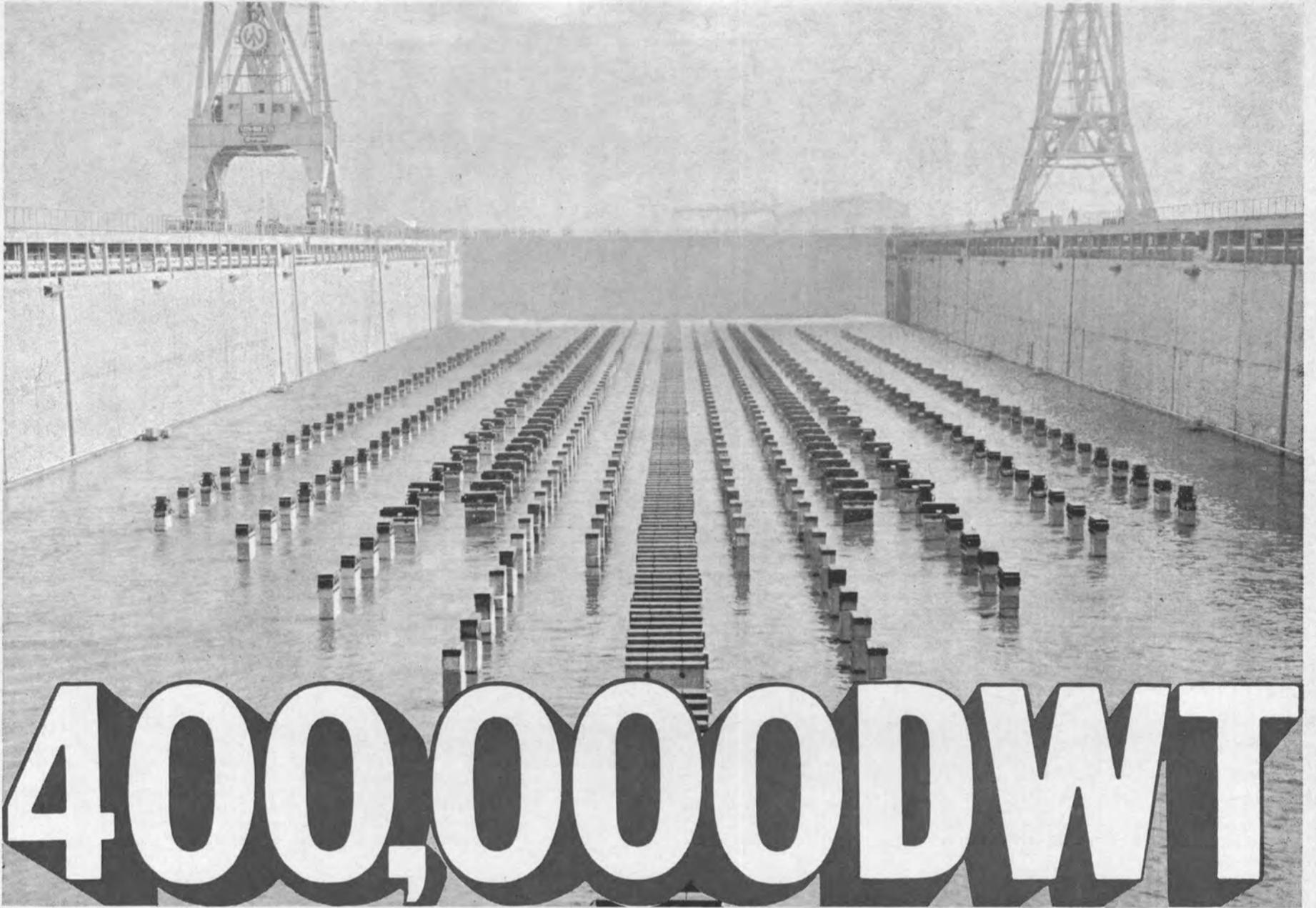
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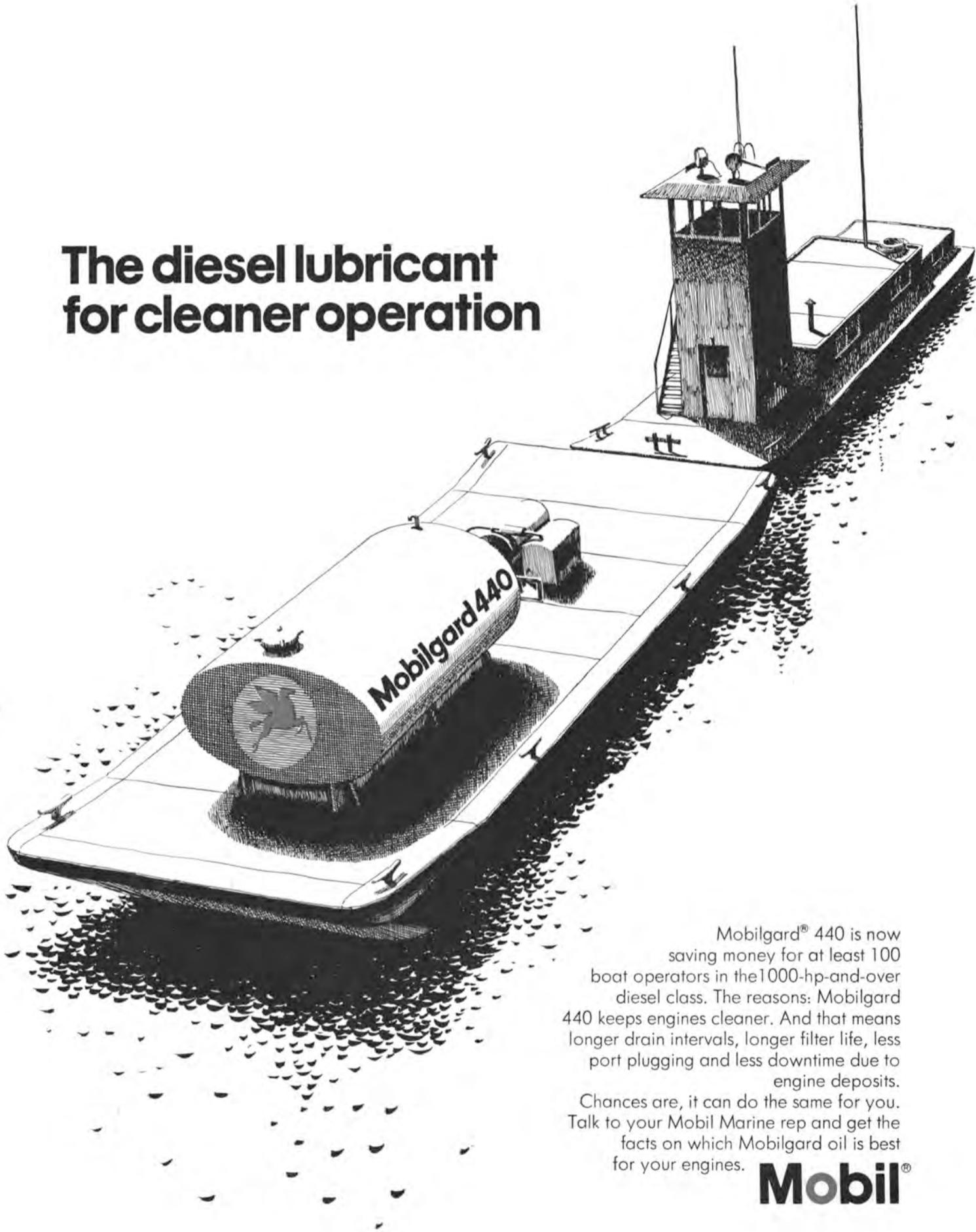


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